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*Illustrated.

The Opportunity Chicago Offers.

A FACT which discourages many of our merchants from attempting to make foreign trade connections is that they have to wait a long time for results. A rubber firm, for example, which can test in a few months, through the efforts of a single travelling man, the desirability of extending its trade into a new section of our own country, would be likely to be dissatisfied if no returns were apparent within a year after making an expensive effort to introduce its goods in a foreign market. Our own vast country presents trade-conditions so similar, from ocean to ocean, that a new product may be placed on sale in one important city after another with little more trouble than is required for adding a new show-case or row of shelving in a village store. With another country, however, involving the use of a different language, perhaps, different trade customs and different tastes on the part of the people, the merchant who would win a place in its trade must be content to wait long for the merits of his goods to be recognized, in order that a steady and profitable demand for them may be built up.

In a recent letter from South Africa to the *Iron Age* Mr. Polhemus Lyon, a New York hardwareman, writes that in many establishments he has been shown goods "picked up at our Centennial Exhibition, at Philadelphia," the Cape Town merchants always adding a remark to the effect that "that was a grand place to post up on American products." Think of an event fifteen years ago still having its effect as an advertisement of our goods! In the part of the world referred to no attempt has been made by our merchants, in most lines, to show that any progress has been made in trade and manufactures since 1876. Is it any wonder, therefore, if trading-firms of Great Britain and continental Europe, more active in pushing trade abroad, have gone ahead of us in supplying the wants of the South Africans?

The same writer notes a great interest in the coming Columbian World's Exposition in the countries visited by him, the native merchants looking forward to a visit to Chicago as an opportunity for replenishing the stock of American novelties in which they invested so profitably at Philadelphia fifteen years ago.

The lesson to our rubber-manufacturers should be plain. Since the Philadelphia exhibition the United States has taken first place among rubber-manufacturing countries, and we are now able to fill almost every imaginable want for rubber in any part of the world. The difficulty of opening new avenues of trade, however, and the length of time required for realizing upon investments in distant fields, may be a sufficient reason for most firms to confine their attention to home markets as a rule. But a great international exposition, such as that in Chicago, will afford every manufacturer in the country an opportunity for placing his wares before leading buyers from every land on the globe. A display there will be worth as much, for immediate results, as a corps of travelling men sent around the world, at an infinitely smaller cost, while it will make a

wider opportunity for future efforts on foreign soil to push the sale of our products.

The Cape Town Government has appointed a commissioner to Chicago and secured space there for representing South African interests, including the great diamond-mining industry, in which mechanical rubber goods of various kinds can find a large use. Certainly our rubber-manufacturers should see to it that the opportunity is not neglected to bring before these far-off exhibitors, together with representatives from every other nation, the goods made here which are suited to their needs. Besides, a great opportunity will be presented at Chicago for studying the wants of foreigners in cases where the styles of our products are not wholly satisfactory.

The Para Trade Not Likely to Be Stopped.

WHILE news from Brazil concerning political disturbances there cannot fail to be of interest to our rubber-men, owing to their dependence upon that country for the most important part of the crude-rubber supply, it is not likely that any situation can arise which will interupt that supply for a sufficient length of time to seriously inconvenience the trade. It will be remembered that the change from the monarchy to a republic in Brazil, not so long ago, was accomplished without any important effect upon the rubber market, although an important factor in that revolution was the province of Grão Pará, the seat of the great rubber-exporting business. In that case the exactions of the old government at Rio upon the rubber trade had been felt by the people of Pará to be unreasonably onerous, and the people there readily joined in the movement which ended in the dethroning of Dom Pedro. There is now a report—unconfirmed, however, on account of the embargo on telegraphing from Brazil—that Pará has seceded or is considering secession from the Republic, which lends more interest to the situation from the rubber-trade standpoint than attaches to the secession of Rio Grande do Sul, in the extreme south.

It is the great extent of Brazil, together with the sparseness of population and the large extent of illiteracy among the voters, that makes self-government so difficult. Pará is so far from the national capital, and means of communication are so imperfect, that her people doubtless feel that her interests do not receive the consideration which they merit, and it would not be surprising if they should regard political independence as desirable. Kentucky had the same feeling at one time, on account of the difficulty of getting consideration from the then almost-inaccessible Government at Washington, and we probably never shall realize how narrowly the United States missed losing the territory on the Pacific slope on account of the isolated condition of the latter before a railroad system across the country became a possibility. The want of compactness of Brazil is the trouble—not the form of government at Rio. The Brazilian problem for a century to come doubtless will be how to keep such a wide territory, with such diverse elements of population and business interests, in harmony as one nation.

All the while, however, the world will demand rubber from the Amazon valley, and all the while the rubber-gatherers will be forced, by the absence of other means of livelihood, to continue their work. Whether Pará secedes or not, the local government will need the money derived from the export duties on rubber, and it must foster the rubber trade as much as possible as the only protection against bankruptcy of the municipal and provincial treasuries. It is possible that the rubber-export trade might be demoralized, in the event of a conflict between Pará and the national authorities, if the latter should attempt to blockade the commerce of the Amazon. It happens, however, that one of the principal naval arsenals of Brazil lies within the province of Grão Pará, and in case of secession would be seized by the local powers and made a means of defense against any movement from Rio.

An Awakening in French Trade Circles.

THE French seem disposed to demand of their Consular service hereafter a more careful attention to questions bearing upon the commerce and resources of the various countries in which Consulates are maintained. The mercantile classes have been complaining that the Consuls have seemed to despise the practical part of their calling, such as answering questions in reference to opportunities for extending trade, preferring to devote themselves to the more abstract science of politics. The evil became so widespread that some commercial notabilities in Paris begged that the office of Consul might be attached to the Ministry of Commerce instead of, as hitherto, to that of Foreign Affairs. Upon consideration, it was discovered that this so-called reform would entail bad results; for if the Consuls are to a certain extent commercial agents they possess also certain attributes which connect them naturally with the Foreign Affairs office, their first and most important duty being to represent abroad, in its most extended sense, French governmental authority.

However, those persons employed at the Consulates have profited by the rather keen criticisms of which they have been the object, and there are at the present moment elaborate and complete reports in the various departments of the Foreign Office on the economic situation of the countries where they are stationed; they are making more exact and expeditious inquiries at the request of mercantile men, and in short are taking up the rôle of commercial agents with more zeal and conscientiousness, and they are no longer threatened with a change in the Ministry, which they considered formerly as a sign of disgrace and downfall.

Another direction in which reform is being urged is in relation to the system of promotion in the Consular service. Promotion is now made, as a rule, by means of a change of station. Thus, as soon as a good agent has taken root in a country and become acquainted with its people and resources, he is removed in order to get a promotion, and in consequence the major part of the services he is qualified to render are lost. The Government will

be urged this winter, in the interests of reform, to adopt a system of stationary promotion, so that the Consul judged worthy of advancement may not entirely change his region in changing his post.

On the whole it is evident that the French, as a commercial nation, are by no means losing their interest in trade with other countries. It would appear, on the contrary, that they are preparing for a sharper competition than ever with their commercial rivals. Having watched the great advantages to commerce derived by Great Britain and Germany from their Consular offices, France is learning a lesson which she wishes at once to profit from by stirring her own public servants to greater activity. It might be suggested that the merchants of the United States might well demand a more careful attention to commercial topics than is now given by our own Consuls. It is only fair to say, however, that they might also study with profit the creditable reports already made by a considerable number of the force.

The Dating-Ahead Evil.

THE Boston Boot and Shoe Club are making a very interesting fight against the practice of "dating ahead" that has obtained throughout the country. At their last meeting, held at Young's Hotel, in Boston, there were one hundred and twenty-five members present, and aside from the toasts the general business was the consideration of a report prepared by E. L. Sprague, the chairman of the committee appointed to consider the matter. It seems that the committee sent a circular to the boot and shoe manufacturers and jobbers in different parts of the country, to learn not only their views upon the subject, but to elicit suggestions as to a remedy. In order to make this as definite as possible they were requested to answer certain questions, and in addition to give their general views. The evils, said the circular, were too early buying, overbuying, an overstock of goods, accumulations of stale goods in jobbing and retail trades, long credits, the overlapping of bills, and unduly large indebtedness. The gist of the replies proved that it is almost a unanimous opinion that the dating-ahead system is an evil.

Almost all expressed themselves as ready and willing to co-operate in any measures that may seem practicable for its reform. They favor a return to the system under which bills shall be dated at the time of shipment, and settlements required within a reasonable time, either by cash or note. It is not believed that any satisfactory modification of the dating-ahead system is really possible; but rather that it must be abolished, and that the general welfare imperatively demands it. The committee have therefore recommended that an attempt be made to secure the adoption, as a basis of the system on which goods shall be sold, of the following:

"That the date of bills shall be that of the date of shipment of goods. Second—That settlement of bills shall be made by notes or cash within 30 days, or within other reasonable time subsequent to the date of bills. Third—That the maximum time given be such that one season's bills shall not overlap the bills of the succeeding season."

To secure the adoption of the above they propose to invite the co-operation of existing organizations representing the different branches of the boot, shoe and leather trades. They propose, also, to co-operate with committees of other trade, business or bank associations which have been or may hereafter be appointed for the purpose, in a more general movement having the same end in view.

An English Editor's Excuse.

OUR London contemporary, after complimenting THE INDIA RUBBER WORLD by reproducing at length the reports of our interviews with leading rubber-men of New York and Boston on the downfall of Vianna, proceeds to make a singular remark, to this effect:

"And here we are reminded that the views of our own [English] manufacturers would be quite as valuable if we could have them. But our friends are too busy to be interviewed in the American fashion, and as a rule do not take kindly to the process. But we shall be glad to receive their views all the same, and any communications on the subject referred to will be welcome."

Without other light on the subject than is contained in this paragraph, it is hard to see why so good a journal as our contemporary shonld lack the confidence of the trade which it serves. Does the editor mean to say that an English rubber manufacturer having views on a trade topic does not dare to express them in conversation with a member of his staff? He certainly would not be understood as meaning to say that the members of his staff are unable to report intelligently the result of conversations with merchants and manufacturers. Nothing would seem more natural, to an American trades-journalist, than that in conversation with manufacturers the subjects of chief importance to the latter should come to the front, while it is recognized here that nothing that can be printed in such journals is of more interest and value than the opinions and facts gained in contact with the directors of the great industries.

It won't do, that excuse about the Britishers being "too busy" to talk about their trade. Why should they be more busy than the heads of big American firms which make more goods than their cousins on the other side of the water? But if they are too busy to talk, how does our contemporary expect them to find time to write out their views for publication, as it suggests? As to "the American fashion" of interviewing, which the British rubbermen are afraid of, we fear that somebody has imposed upon them with a bogus "process"—something like pulling teeth, perhaps, or shaving with a dull razor in a barber's chair. Did the *Journal*, really, ever try to get the views of any of its readers in "the American fashion?"

NIGER balls are used very extensively abroad, but beyond two or three manufactories in this country they are ignored, the difficulty being that the sand is not eliminated from them by the natives. It is a rubber similar to the Sierra Leone, only of a superior grade. It is worth on the New York market about 40 to 44 cents, 75,000 pounds being on sale at present.

The Political Troubles in Brazil.

THE latest intelligence received from Brazil has been of a disquieting nature, and as the political happenings in that country are of importance to the rubber trade, the reported secession of the province of Grao Pará from the Republic has aroused great interest among importers and speculators. Of course the cable in twenty-four hours may confirm or contradict the report, but in any event the possibility of this secession will be present until the Brazilian government passes into a more substantial form. President da Fonseca, when he established the provisional government, promised the people that he would call a congress within twelve months, which promise he kept in mere words, dismissing it, however, with anger within two weeks. It is this breach of faith that has made the people angry and now revolution is to be added to the turbulent scenes of the past year. Grao Pará and Amazonas, it seems, are notoriously disloyal and the people are not always discreet in their exhibitions of this hostile feeling. The governor of Amazonas was lately inaugurated at the mouth of the cannon, and even this did not awe the people, 3500 of whom joined in a procession to do honor to the retiring officer.

Rubber-men are mostly interested in learning the chances for a conflict and its duration, with a view to calculating its effects on the price of rubber. Pará is substantially the key to the Amazon, and as that province goes so must Amazonas. A gunboat could readily blockade the Amazon on the Pará side, and in the northern outlet the channels are such that another could command the situation. This of course would stop all commerce, and should the Brazilian government in its turn blockade Pará the same state of affairs would exist. Again the natives would hesitate to come into the towns for fear of conscription, and the gathering of rubber would naturally be very limited during the conflict. The people of Pará are natural seamen and at home on the water, while the Rio men are better landsmen.

The population of the province of Grao Pará is about 400,000, in an area of 412,407 square miles. The city of Pará has a population of about 70,000. It is readily defended by land, owing to the peculiarity of its surroundings. The land rises from the city on all sides in gentle undulations, indented by deep natural ditches called gapos. Some of these ditches will float canoes and small craft, and are then called agarapo. In all of these ditches the tide ebbs and flows for several miles inland. Between the gapos the tide has made a first deposit, and on top of this a decaying vegetation has made another deposit. On the higher land a bed of white sand twenty feet deep is found, and on this is another layer of decayed vegetation. Beyond this high ground a matter of several miles comes the ubiquitous Brazilian forest with a path here and there, and that is all.

In these forests among other tribulations is an ant whose size is remarkable, two inches long, and their bite is equal to that of a wasp. The rains are daily and drenching, and in travelling through the undergrowth a simple scratch will become the size of a dollar in a day's time. To the unacclimated the country is as unhealthy as any part of the world. Last season 35,000 laborers, women and children came from Ceará to work in the forests, and only one-half of them survived. It is difficult to say what would become of an army or navy which would undertake to lay siege to Pará by land or water.

Pará in itself is very dependent upon the outside world for the necessaries of life. There are no manufactures, and very little produce is raised. It is dependent upon the world as a customer for its rubber and cocoa, and in this respect a blockade would be serious. By itself peaceably it would gain in wealth, as it now pays heavy tribute to the Rio government. The city itself has many peculiarities. The buildings are old, the Cathedral and the Theatre being the more important. A substantial sea-wall is a feature. A good many of the roofs of the houses are covered with Lisbon colored tiles, and present quite a fine appearance. The street cars are called "bonds" and the conductors use trumpets. The drinking-water is very poor, and almost unfilterable. Yellow fever, dysentery and typhoid are always prevalent, but not often epidemic. The fondness of the people for display is illustrated in the exhibition of fireworks on feast-days at church, and in an excessive use of jewelry among the lower classes.

The sewerage is of the most primitive character. It is simply the vulture. Like some other countries, Pará imposes a fine of ten dollars on any one harming these creatures, and the far-scented, far-sighted bird is the natural scavenger of the city. The same natural surroundings apply with variations to Manáos, the principal town in the State of Amazonas, and as they are closely allied in interest, both wealthy, and if Pará has taken time by the forelock, and secured the arsenal within her borders and a few of the craft on the water, it will be difficult to bring these states back into submission.

"Of course, one opinion is as good as another," said one of the largest manufacturers of rubber goods in New York, "but the situation in Brazil is not without cause for anxiety. Pará is a good way from Rio, thousands of miles in fact, but the first revolt after the deposition of the emperor came from there, and not long ago the inauguration of a governor at Manáos was effected with a show of naval force in the Amazon. You remember that even then the people turned out *en masse* the next Sunday in honor of the deposed governor. That was only a few weeks ago, and it shows that there is a very disloyal feeling yet upon the Amazon which is likely to be set on fire by the events now happening to the south of them. Then the government itself as a whole is very unstable. The people, ignorant as they are, were hardly fit for the change, and the ambitions of their leaders are not conducive to stability.

"Now as to rubber. Exchange has fallen, and naturally the foreign houses would like to send all the rubber they have out of the country. There is probably a good profit in it now, but there is another incentive to do this. If the country become turbulent the same state of affairs would take place. There will likely be large exports from Brazil in the near future, and for the present low prices will prevail. Then will come the unexpected. We cannot say what

England will do. The Brazilians are badly in debt and the commercial classes in England may demand a better respect for their pecuniary rights. The coast may be blockaded, exports may be stopped or almost anything may happen in the peculiar condition of affairs down there. We may not have a very even rubber market during the next twelve months. With the present outlook everything is in the dark, and almost anything may happen. I believe that we are entering upon tempestuous times—at least all of us that have anything to do with that country."

The Rubber-Imports Decisions.

IN the matter of the importation of mackintosh cloths in which the custom-house authorities decided some time since that so long as the rubber was in value the chief component part the goods could be entered at a lower rate of duty, following that named for manufactures of rubber, several protests have again been made by American manufacturers, but without avail. So soon as in the manufacture of these goods the wool or the cotton becomes in cost the greatest element in value, then the duty will be placed accordingly, and it is believed that it will be prohibitory. When the first decision was made rubber was selling at 95 cents per pound, but since that time the gum has declined in value and has approached a cost so low that is was thought possible that Captain Sharrett's decision could be reversed, but evidently the line has not been reached, and he was compelled to give again an adverse decision to the domestic manufacturers.

The price of rubber may fluctuate below the point which would prohitit the importation of these goods and the question is one that will keep all parties on the outlook for any variation that may help their respective intercsts. Meanwhile the competition is not so severe as was expected. The style of the American goods is "taking" and it is only in dull weeks that the American manufacturer's prices are criticised. Then the American Manufacturer, in making up his goods, gets a fit hard to excel and there he has an advantage with a moderately fastidious customer in this way who invariably selects the home-made garment. There are two at least of our manufacturers who have bestowed money and attention in popularizing mackintoshes by giving them grace and fit somewhat remarkable when we glance at the rain coat so much worn ten years ago.

The Weather of the Month.

THE weather during the past month has been far from satisfactory to rubber-men. A protracted drought more severe than any on record in the annals of the Weather Bureau at Washington, has been in progress until within the past ten days. In many of the Southern States no rain fell at all, and in other portions of the country only about one-tenth of an average rain-fall occurred. Around New York City no better description could be given of the severity of the drought than the repeated warnings that Croton water must be used sparingly, notwithstanding the extensive improvements that had recently been made to augment the supply beyond all reasonable chance of danger. In the West it was such that the markets of the world were agitated about the chances of failure in the coming winter wheat.

Within the past few days, however, copious rains have fallen in many sections. During the past thirty days the South Atlantic coast has been more favored than others, and in Dakota and the extreme Northwest good rains occurred at intervals. It was not until the eighth of the present month that any rains occurred in the Ohio and Mississippi valleys, and their continuance to reach an approximation to an average is a problem with mineralogists. A snow-storm has occurred in Virginia, Maryland and Central Pennsylvania, and some minor ones in Dakota.

All in all, rubber-men do not care to experience another season of warm and dry weather such as has been recorded in the United States since September 15.

A Rubber-Exporting Town Burned.

MAJUNGA, which exports a kind of rubber bearing its name, was almost entirely destroyed by fire recently, only ten houses remaining, and the loss being $200,000. It is on the northwest coast of Madagascar, at the entrance of Bambatooka Bay. This rubber it not very generally used in this country, but in England it ranks fairly well, but not so high as some other sorts of Madagascar, which stand next to Pará in favor. The best sorts of Madagascar come from Tamatave, not far from Majunga, however, and is divided into four or five grades—pink, white and sticky, brown slab, dark spongy and black. Majunga comes in balls and ranks in price with the white Tamative, about 50 cents per pound.

It was not until 1887 that the Madagascar rubber was imported into England to any extent, but has rapidly grown in favor since. It has, however, been largely used in France for a long time. It grows on shrubs twenty feet high, the different grades sometimes being all mixed together thus impairing the quality. The milk is coagulated in either of two ways, with salt-water or by artificial heat. The salt-water process is open to the objection that all the water is not expelled from the milk, but artificial heat is used in coagulating Pará, and possibly the similarity in methods is a long step in placing the better sort of Madagascar so near in quality to the rubber of the Amazon.

The Source of Balata.

THE balata tree, which yields the gum recently brought to notice prominently as a substitute for gutta-percha, grows in Jamaica, Venezuela and Guiana, to a height of a hundred feet or more. The trees have large spreading heads. The bark is more than one-half inch thick, and the wood itself is hard and of a reddish color, and is one of the densest that grows in that portion of the world.

Baby Cleveland's Rubber Bath.

NOT many babies of the same age can boast of as many presents, of such handsome design, from so many people of note, as have been showered upon the infant daughter of ex President Grover Cleveland. The newspapers, which found the public ever ready to hear about the bride of the White-House, who is still an object of wide interest since her retirement to a less conspicuous position, are devoting scarcely less attention to the Cleveland baby. The New York *Sun* has a long article, with illustrations, on the handsome presents which have been sent in to the ex-President's home since the advent of the baby, and one of the pictures is given herewith. Says the

writer: "Another interesting thing about the baby is her bath. It might be expected after all this silver service that somebody had sent in a solid silver bathtub. But nobody has. The bathtub is of rubber, and is propped up on cross sticks at each end, looking like a compromise between a small hammock and a camp-stool."

The New England Rubber Weed.

IT is a common remark among people interested in the rubber business that it is a pity that the only rubber-producing plant in the temperate zone should be a failure. They refer of course to the ordinary milk-weed, although that is not the only plant that has caoutchouc in its veins. In view of the fact that the *Asclepias* has attracted attention from the abundance of its milky juice, and because many remember experiments that were tried in this country and Europe, with a view to utilizing this rubber sap, *Chambers's* article on the plant may be of interest:

"*Asclepias Syriaca*, Syrian or Virginian Swallow-wort, sometimes called Virginia Silk, appears to be a native of North America, and not of Syria, as was supposed. It is frequently cultivated in flower-gardens. It has an unbranched stem 4–7 feet high; thick, ovate leaves, covered with grayish down on the under side; and large, stalked, nodding umbels of many dull-red flowers, which diffuse a strong and sweetish odor. The whole plant is full of an acrid, white milk which contains caoutchouc. The young shoots are eaten in North America like asparagus, as those of *Asclepias stipitacea* are in Arabia. A brown, well-tasted sugar is prepared in Canada from the flowers; and the silk-like down of the seeds has been used for the manufacture of textile fabrics, either alone, or along with wool or silk, but is more frequently employed for the preparation of wadding, and for stuffing mattresses and pillows. The plant appears, however, to be chiefly valuable for the fibre of its stalks, which is used for the manufacture of thread, cloth ropes, nets, etc., in many parts of North America, and upon account of which it has been recommended for general cultivation in Europe. The fibre is said to be of very superior quality. The plant rapidly extends by its creeping roots, and readily becomes a weed, where it has been introduced. The roots of several other North American species are used as diaphoretics and expectorants, as *Asclepias incarnata*, *Asclepias tuberosa*, etc. The latter is a very ornamental garden-flower, and is called butterfly weed and pleurisy root in the United States, where it is frequent on stony and sandy grounds. *Asclepias Curassarica* is called Wild Ipecacuanha in the West Indies, and a decoction of it is used by the negroes as an emetic and purgative."

Two Attractive New Trade-Marks.

THE Bedford Rubber Co. (A. P. Stephens & Co.) No. 416 Bedford Avenue, Brooklyn, N. Y., established last July, are reported as doing a fine business. They have recently adopted a trade-mark representing a graceful swan in a border on two sides of which are Grecian scrolls, with the inscription of the company floating gracefully from the beak of the bird.

Mr. A. D. Hawkins, of the Metropolitan Rubber Co., who was the designer of the trade-mark, has also made a neat miniature of a railway station crowded with people destined to the Rubber Company. "Nos. 549 and 651, Broadway," and the word "Metropolitan," are all worked into the picture in a way to give instruction as to the whereabouts of the company represented. The picture is lifelike and full of pleasant suggestions to any one who has visited the Broadway store.

The Large Rubber-Toy Trade.

THERE is a great competition among the American and foreign makers of rubber toys. There are several large importers in New York who, as well as domestic manufacturers, put these goods on the market at this season of the year. The variety is very large and in animals alone there is material enough for a small menagerie. And it is not a quiet menagerie, for every animal has a squeak or a growl, a small collection of mock animals producing a full octave. Then there are odd forms, such as boy on horse, soldiers, clown on the moon, girl in catskin, Puck, Santa Claus, tambourine girl, trumpeters, base ball boy, Japanese girl, etc.

The dolls are full length, jointed and dressed, white and negro. Musical balls are fluted, raised star, acrobat, acrobat and grotesque, and as much as 3½ inches in diameter. Of rattles there are about one hundred numbers, bat balls without end, red and colored inflated balls, jackstone balls, sponged rubber, Lacrosse, velours (cloth surface), foot balls, etc.

All dealers expect a large business during the coming holiday season. Prices are not high, the competition from all quarters being close.

THE immigration into Costa Rica is being stimulated with great vigor, an American colonization society having secured 30,000 acres. Costa Rica was once a fairly-active rubber-exporting country; but of late years little has been done in that direction.

In the Brazilian Forests.

BY HENRY E. MILLER.

ALTHOUGH many descriptions have been written of the process of rubber-gathering the world over, very few have been on the ground to see it done. Of course, it is well known that the best rubber comes from the great swampy regions of Brazil, and is gathered by the half-savage South American Indians, who live on the banks of the Amazon. About July, which month ushers in the dry season, the people begin to talk and plan for the journey into the interior for rubber. It takes them a long time to prepare, although they have very little to do in reality. Their work does not begin until about the first of September. To be sure the hut of the Indian is often times a long distance from the part of the forest in which he intends to work, and he takes plenty of time in getting there. In moving he takes the whole of his household goods, his wife and numerous children, and embarking on a roughly-constructed raft, or a canoe, formed of a single tree trunk, he floats or paddles down to the Amazon, then up to his district. All of his goods are taken from his hut, as has been said, and that is left bare and desolate. The clothing of the family can be easily carried on their backs. Children wear nothing at all, a man's dress is a shirt and a pair of trousers, and woman's a gauze chemise and calico petticoat.

In a home-made basket is a stock of tapioca and a possibility of some dried meat or fish. This with an antiquated musket almost as dangerous to the possessor as to any game that it may be aimed at; the ever present Indian fishing-tackle; steel, flint and tinder, two or more hatchets, or axes, and the machete, form the indispensable articles of the honsehold. The implements of their trade, as rubber-gatherers, are the little clay cups into which the rubber sap trickles, the calabashes with which nature has supplied them, and the tiny axe which is used in tapping the tree.

Into the great floating forest goes the adventurous Indian, where one might travel for years almost without seeing even a sign of man. The great floods that have covered the trees almost to their tops for months have at last subsided, and the rubber-gatherer paddling up a water-way selects a spot for a camp, unloads his canoe, swings his hammock and is at home. With the faculty that he possesses for avoiding work, he has selected a spot where the undergrowth is not too dense and where the rubber trees are close to his camp. One of the first things that he does is to build a dwelling, with a floor that will be above the reach of the water.

The many trees that grow so freely there form the supports for his house, which is thatched with great palm leaves, and gives a sheltering space for from ten to twenty people. The walls are simply mats which are so hung as to keep out the rain, but there is no attempt to keep out the cold, for that is something which does not exist in this great Amazonian steam-box.

The house finished at an early hour in the morning the gatherer starts out for his day's work. With his tiny axe he makes from fifteen to twenty incisions into the bark of the trees about him at a convenient height, and sticks one of his little cups just beneath each cut to receive the sap. In his labor his wife and children assist, and in a little while he has nearly fifty trees tapped. By this time it is necessary for him to go around a second time, in order to collect the juice, so taking a small wooden bucket, he and his dark-skinned family begin the process of collecting. Another reason for this collection before the cups are really filled, is that the liquid sap is already beginning to coagulate in the incision, and is not flowing as rapidly as it should. The incision therefore has to be cleared, the cup emptied and replaced, and so the work goes on. It is probable that before a great amount of rubber is accumulated in the storehouse of the gatherer a trading boat will appear, and for a small sum will secure it all. Indeed, it will be remarkable if while he and his children are hungry, the master of the household does not sell the entire stock for trinkets, rum, or a cheap grade of fire-works. The process of drying the sap has been so often described that it is hardly worth another repetition. It has been asserted that the smoke of the palm nut, which the Indian uses in drying the Pará rubber, has given this gum much of its excellence. Whether it is true that it does absorb certain resinous qualities that all kinds of caoutchouc possesses is a question. Certain it is, howeves, that the Pará rubber, smoked as it is, is far better than any grade of gum, and does not possess resins that some of the African gums contain.

Mechanical processes for drying and curing crude rubber have been thought out by inventors, chiefly Americans, but have never been introduced, and it is a question, no matter what their excellencies might be, if the indolent Indian would ever accept them.

Some Gutta-Percha Facts.

THE price of gutta-percha in America is nearly double what it was two years ago. This remarkable advance in the price of the article is attributed to two causes—the large quantities required in the manufacture of electric machinery and plant and the reckless destruction of the trees from which the gum is obtained. This gum or sap is not obtained by merely tapping the trees, as is done by the gatherers of crude rubber along the Amazon and its tributaries, but the Malays and natives of Borneo who collect gutta-percha fell each tree from which gum is to be extracted, and thus the destruction of the trees and consequent scarcity of the product is explained. From 1854 to 1875, 70,000 piculs, weighing 133⅓lb. each, of gutta-percha were exported from Sarawak alone, and this meant the destruction of 3,000,000 trees. As no trees are planted, the only thing which has saved this species of plant from annihilation is that it does not produce the gum in paying quantities until it is twenty-five to thirty years old.

The method pursued in felling the trees is given by the *Scientific American* as follows:—A staging is erected from fourteen to sixteen feet high, which enables the workman to cut the trees just above the buttresses, or "banees," as they are called. The tools used in felling are either "billiongs" or "parangs." A billiong is a kind of axe used by the Malays in felling, building, and the like. The blade is of a chisel-like form and the tag is secured at right angles to a handle by means of a lashing of rattan or cane. After the tree is cut down, some natives beat the bark with mallets to accelerate the flow of the sap, which usually runs slowly, changing color meanwhile. The sap is boiled either with water, lime juice, or cocoa-nut oil, and is generally run into moulds.

The gutta-percha tree, the vernacular name of which is "taban," also bears a fruit about an inch long, ovid in shape, which is eaten by the natives. In Siak, Sumatra, a vegetable butter is prepared from the seeds of this fruit. The trees attain to a height of 60 to 80 feet, with a diameter of from 2 to 4 feet. The wood is soft, fibrous, spongy, of a pale color, marked with black lines, these being the reservoirs of the gutta-percha. The yield of a well-grown tree of the best variety is from 2 to 3lb. of gutta-yercha, such a tree being about thirty years old, 30 to 40 feet.high. and 1 feet 6 in. to 3 feet in circumference.

Gutta-percha is used in a variety of different ways. It is an excellent non-conductor of electricity and the most practical useful insulating material that has yet been discovered. No other substance has been found so efficient for submarine cables. Gutta-percha retains its form at temperatures below 115° F. It is insoluable in water, even in salt water, and it is also insoluble in alkaline solutions and various acids, and is, therefore, made into vessels to contain these substances. By mixing bisulphate of carbon with gutta-percha a liquid cement is produced, which is employed in putting patches upon shoes, thus dispensing with sewing and securing a neater appearance on the shoe. The same cement is also used in repairing rabbit skins. These skins are weak, and are easily torn; but by backing them with this cement they are made tougher, and are sold in some cases by unscrupulous dealers for squirrel skins.

Efforts have been made to check the destruction of this most useful tree by substituting tapping for felling, but the greed of the natives is so great that they adhere to the latter method, because it gives them more of the sap for immediate marketing, being regardless of the fact that the trees are being exterminated. The only remedy for the great scarcity of the article seems to be the cultivation of the tree, and measures of this kind will have to be adopted if gutta-percha, which seems to be an article entirely indispensable in some lines of manufacture, is to retain its place in ths commerce of the world.—*Industries (London).*

The India-Rubber Industry of Dutch Guiana.

THE caoutchouc, or India-rubber, is produced in Dutch Guiana under different species, the most important of which is "balata" or "milk of the bullet tree," the export of which, says Consul Wyndham, of Paramaribo, is attaining considerable proportions, and will, it is believed, be very productive for a time only, as there is no forest-conservancy law in the colony. Persons who are granted tracts of land for the gathering of this product are uncontrolled in their method of drawing the milk, which results in trees being totally destroyed to get the greatest amount of milk by the quickest and most inexpensive method.

The district where the largest quantity of "balata" trees are known to exist in the colony is that bordering on the Correntyne River, known in Dutch Guiana as the "Nickerie district," and large tracts of land have been given to an English firm to collect balata. Balata is treated by the manufacturers simply as a superior kind of gutta-percha, and therefore its name disappears when manufactured; nevertheless balata is distinctly different from gutta-percha, and this is manifested in some of its physical characters—for instance, it is somewhat softer at ordinary temperature and not so rigid in the cold. Besides the bullet tree, there are trees or plants known as the *Tonckpong*, which gives a valuable rubber, and again *Bartaballi* and *Bushrope*, to which collectors do not appear to have given a name. The India-rubber balata industry, although carried on in the colony of Dutch Guiana in a desultory way for a long time, has never until quite recently assumed sufficient importance to cause the local government to legislate upon it. As yet the law only lays down the regulations under which concessions are granted, and does not deal with the supervision or treatment of the trees, or the method of extracting the milk.

Caoutchouc or India-rubber is yielded both by trees and vines. Those already mentioned are, as far as it is known, the principal ones in the colony, and the method of collecting the milk is by cutting down trees, by incisions, and by circling trees. In each case there is no protective law, and the trees are generally ruined. The chief port of export is Demerara, and as yet no export duty exists, but as the production increases it is expected that it will not escape taxation. Nothing has been done to cultivate the plant, neither does the soil seem to favor its growth except in some peculiar circumstances. Consul Wyndham says that new laws are contemplated for the leasing of lands to prospect for balata.—*Journal of the Society of Arts.*

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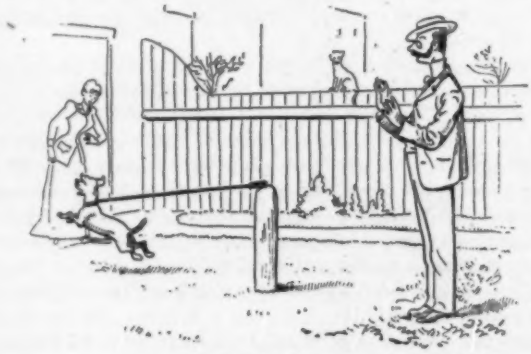


SHE CALLS HIM.

THE REBOUND.

—*From "Life," New York.*

B. M. HOTCHKISS.

Pioneers in the Rubber Trade.

BURRITT M. HOTCHKISS.

BURRITT M. HOTCHKISS, who may well be classed among the pioneers in the business of rubber manufacturing, was born in 1820 in Prospect, Conn. But little is known of his early life, except that he received a fair education for those days and was buffeted around as usual to a young man who had to make his way in the world. He was attracted to the rubber trade by the starting of the factory of the India Rubber Glove Co., at Litchfield, Conn., but did not enter their service at that time, the opportunity coming from the Goodyear Metallic Rubber Shoe Co. with whom he remained until 1848. At that time the Glove Co. moved to Naugatuck, Conn., and Mr. Hotchkiss went with them as their superintendent, succeeding G. M. Allerton in that capacity. At that time the pay-roll consisted of only seven names, and the work was confined to the manufacture of gloves and finger caps. In 1854 Mr. Hotchkiss caught the Western fever and moved to Bloomfield, Iowa, but he repented of this almost at once and returned to Naugatuck, resuming his old place as superintendent of the rubber factory.

He remained in this position until July 5, 1891, when he died at the age of seventy-one years. As officer, stockholder and active worker in the rubber mill, Mr. Hotchkiss spent forty-seven years. Until the last winter he was almost always to be found in the factory office at 9 o'clock in the morning. The last few years of his life his duties were of the lightest, yet he seemed to enjoy the regular routine of the mill, and followed it as far as he was able. A serious attack of pneumonia during that winter came very near proving fatal, but he recovered and again put in an appearance at the factory office.

Mr. Hotchkiss had some very strong points of character. Although not a man of finished education, he had learned to grapple with the problems of life in a practical and successful manner He would not trust to theories, but was a careful, studious experimenter. He studied the rubber business so thoroughly that he unconsciously became known as one of the best compounders in the country. In this he excelled. There was no beaten path before him, practically no predecessors. He was a capital draughtsman by intuition. If any improvements were to be made in the mills he would go off by himself and in an hour's time would bring forward a carefully detailed plat with all details. He was an inventor, holding at different times several patents. He was in fact a man of solid parts, doing many things well. As a superintendent he controlled men rather by quiet appeal to their better natures than by inflexible coercion. He gave them every encouragement. He was an honest man in the strict sense of the word. Prudently he accumulated perhaps $50,000, lived the allotted time of man, and left a family who speak of him with love and reverence.

He was a prominent and useful citizen of the town in which he lived. He was survived by two sons, both of whom are in the rubber business—Robert E. Hotchkiss, Superintendent of the Boston Rubber Co., Chelsea, Mass., and Frank D. Hotchkiss, Superintendent of the Fairfield (Conn.) Rubber Co.

The Rubber-Stopple Trade.

IN the good old times when Pará rubber went begging at 40 cents a pound, the first rubber stopple was born. It was as white as the finest oxide of zinc could make it, and so soft, flexible, and elastic, that a blind man would recognize the large percentage of rubber in it, and the conscientious carefulness of its cure. To say that the drugmen appreciated it is stating it far too mildly. They went wild over it, and it at once displaced cork stopples in many places. After a little, however, raw rubber began to go up and the buyers of rubber stopples with characteristic inconsistency began to clamor for lower prices. To suit them the manufacturer began to put in more zinc and less rubber. Then a little later, under the same pressure, the costly zinc was displaced in part by cheap whiting.

After a time, it was found that the vulcanized white rubber scrap could be ground into a powder, and used as a filling, and, little by little, the stopple fell from its first high estate and became of a dirty yellow color, of a hard texture, and as heavy as Vianna's heart. Then the buyer kicked, and a slight reaction set in, and the goods were somewhat improved.

During this reign of deterioration, however, there had been some improvements. The first method of setting up a solid core, of the size desired for the stopple, had been done away with, and the tubing machine formed it. Then, too, instead of having a variety of sizes that varied with each manufacturer, a series of standard sizes was inaugurated. The wiser of the manufacturers had also learned how much shoddy could be incorporated without injuring the effectiveness of the stopple. And during this time how busy the inventors had been. They had designed scores of kinds of stopples, that are to-day made by the car-load. The beer-stopples, laboratory-corks, inhaler-corks, and chemical-stopples had increased by the hundred. They were made of all qualities, all colors of rubber, white, red, black and maroon. They were made of compounds containing ground cork, asbestos, silica and everything but road mud.

Nor is the end yet. Every number of the *Official Patent Office Gazette* almost contains a new form of rubber stopple. So it has come to pass that this little bit of the rubber business has grown to great proportions, and to-day a buyer can get almost any shape he wishes, of any stock he wants, at very nearly the price he demands.

THE announcement is made that "*The Electrician* Electrical Trades' Directory and Hand-book" for 1892, being the tenth annual issue of this valuable publication, will be ready in January. Our London contemporary has earned an enviable reputation for this hand-book of British, colonial and foreign electricians and manufacturers of electrical-supplies, and it is safe to predict that this reputation will be well sustained in the forthcoming volume.

Rubber in Billiard-Tables.

THE billiard-table, in such wide use as a delightful means of recreation, has reached its present high degree of development only through the use of India-rubber. In order that the ball, when thrown against the cushion, shall rebound at the same angle as that at which it is sent by the player's cue, the cushion must possess a perfectly elastic rigid surface. Before the coming into use of rubber various substances were used for billiard-table cushions, the chief of which were cloth or selvage, made into pads traversing the length of the table. Of course the cushion thus made was very crude, and only the six-pocket table was practicable. Carom shots were made, but double caroms were accidental. Almost immediately upon the vulcanization of India-rubber some leading minds in the rubber trade saw in the use of this material an opportunity to improve the billiard-table. To obtain the high qualities possible through the use of this most satisfactory of all elastic substances has been the study of some able men, who have spent much time and a great deal of money in experimenting, the result of their work being represented in a great diversity of patents.

Credit for the pioneer movement in this respect belongs probably to the Boston Belting Co., whose first results were produced in 1849. Not long afterward John H. Cheever and his associates, Rubey and Richardson, came to New York and the business received a great impetus from their efforts. About that time a round rubber tube was made, the idea of Matthew Delaney. The tube was about three-quarters of an inch in diameter and the matter of attaching it to the table was always debatable among billiard-table makers. If poised too low the ball would slide over it and off the table. On the other hand, if it were placed too high the player was impeded in his movements in the handling of the cue. Delaney made a great number of these tables and some of them are yet in existence, notably one in a hotel near the mammoth trees in California, owned by an old-time tavern-keeper. Michael Phelan, in 1852, came out with a cushion, rectangular in shape, and essayed other improvements. While India-rubber proved very desirable on account of its elasticity, it was soon discovered that this quality allowed the ball to sink into the cushion, very slightly, of course, but sufficiently to destroy to a great extent the movement in a proper angle, thus interfering with the play of those who were making a profession of billiards. Phelan vulcanized his cushions to a strip of cork and for a short time this was considered an improvement. But the cork crumbled and was abandoned. Then a piece of leather was tried and then canvas, but the cushion was "dead" and unsatisfactory.

During this time Delaney had caught the gold fever and had gone to California. He kept up an interest in billiards and from time to time he learned in his intelligence from "back East" of the difficulties which were being encountered. He was by trade a piano-forte maker, and knowing the elasticity of small wire with its delicacy in throwing off the hammer of a key, he believed that a solution could be found in that direction. He sent home for some of the wire and in order that it should not become kinked it was forwarded to him in stretches rigidly packed in longitudinal cases. This was found after various experiments, to answer very well. The cushion by that time had naturally fallen into the triangular form and the wire was placed in the apex as nearly to the edge as possible. At first it was vulcanized, but it would warp and variations would be found in the play of the expert. Afterwards a minute hole the length of the cushion was formed, and the wire threaded through it, a practice yet in vogue. Delaney obtained a patent for this, over which he had a severe struggle with some parties who placed two wires instead of one in the cushion, which, if it were an improvement, would naturally interfere with the original patent on the principle that the lesser was a part of the whole, and it was so decided. During this period of years many substitutes for the wire were tried, with more or less success. Hard rubber was inserted but great difficulty was experienced in obtaining an even layer and the results were not satisfactory. Catgut was tried and this also proved unsatisfactory. A very successful substitute is made by the Gutta Percha and Rubber Manufacturing Co. and sold largely in the West. It has a strip of gutta-percha cloth running along the entire length of the cushion, immediately under the rubber surface. Gutta-percha in vulcanization will take a higher degree of heat than rubber and can be made harder. It is claimed that this makes a "lively" cushion, the ball freeing itself from the contact very readily.

Delaney has lately patented a cushion which has the wire in a small coil, claiming that this gives a quicker rebound than the straight metal. The point is to obtain a cushion of rubber which, being elastic, throws the ball off, but to so form the surface of the rubber with some rigid material that the ball will not be compelled to do any work unnecessarily in burying itself in the soft material of which the cushion is composed. The different states of temperature also have to be considered as variations and stickiness occur. Metal has to be tightened at times, and devices are made for that purpose. No sticky material, which would be a detriment in hot days, could be used on billiard-tables. Neither can any material be used that would expand or contract disproportionately with the body of the cushion, else the latter would be warped. There are now few patents in existence and the ordinary billiard-saloon keeper is apt to purchase the lower-priced, but in the very popular resorts in the metropolitan centres great care is taken in this respect, though there is much variation in opinion as to the respective merits of the different cushions.

The Brunswick-Balke-Collender Co., who have a large manufactory in New York, with extensive connections throughout the country, own the patent under which a strip of canvas is inserted on the face of the cushion. L. F. Silva, the manager of the company, considers this superior to all others, claiming that metal is inconvenient to handle, and will corrode where sulphur is used in rubber. Another difficulty, he says, is to get a material that will allow the ball to make the same angle on the short rail as on the long. The authorities, he says, do not favor too "lively"

a cushion, believing that speed interferes with accuracy. The constant adjustment of metal is a disadvantage which naturally gives great irregularity in play. He thinks gutta-percha too hard, and believes in the canvas. The cushion is the most important matter, and cannot be treated lightly. Notice the angle at which it is placed on the moulding—a matter of long study. The proportions are just right, that slight incline towards the centre of the table holding the ball down, and tending to prevent it from jumping off the table.

Maurice Daly, who owns the Trinity billiard-rooms, a celebrated down-town resort for Wall-Street men, says that the "Monarch" or canvas cushion is very popular in New York. He believes, as Mr. Silva does, that six and seven cushions are enough for a ball to take, and experts and champions take this view generally.

"The demand for cushions is increasing," said Mr. Daly, "in accordance with the great growth of the game. The manufacture has quadrupled in ten years. Private houses everywhere have billiard-tables, and now there are professors who impart the science of the game."

Abroad not so much attention has been paid to the cushion. The English have the simple rectangular form, and as the game played is a pocket one, there is not much demand for a change. The French game has not called for a high order of cushion, but recently the American game has become fashionable with them owing to a visit of their experts to this country, and a better order of cushion is being made for them. The American game, with its double cushion caroms, and sometimes better, calls for a very lively cushion, one which will allow the ball to take nine or ten cushions, and to be as true as skill can make it. Naturally perfection has not been reached, but the marvelous runs that the champion makes on a simple carom table could not be possible were it not for the high skill of our rubber manufacturers, who give him a true strip of pure Pará moulded in the best possible manner, combined at its point of contact of the ball with some unyielding substance which experience has shown to be the best for the purpose.

More Rubber Bicycle-Tires Coming.

THE bicycle trade next season will be one of great magnitude, unless all signs fail, and the agents of foreign manufacturers, with new styles in rubber tires, are going over the country arranging to secure a share of the business. More attention will be paid to tires than ever, and a rivalry is imminent among the various manufacturers which will tax the resources of rubber-men. Some new styles of the New York Belting and Packing Co. have already been mentioned in this journal. The Pope Manufacturing Co. also expect to bring out a new pattern of pneumatic tire.

Several novelties from England are in the market. The North British Rubber Co. will exploit their "Clincher" tire, and in the meantime endeavor to have it manufactured in this country.

Some pneumatics encased in canvas have been patented, it being claimed that by this cover the inner tube is not liable to be cut. If they should be punctured, the canvas is ripped in the seam, and the tube patched. Some novelties have two tubes and one has four, so that if one should burst, the rider can get home on three, which beats walking, as happened to a rider the other day who found himself stranded in a sudden rain-storm eight miles from the nearest house on account of a broken wheel.

A novelty in pneumatics has the usual outside rubber band with thickened outside edge and a pure rubber inner tube. This makes of it a true pneumatic. This tire is laced on to the rim, which is an innovation. The inner tube is incased in a leather tube, with an inside lining of linen. The leather does not seem to interfere with elasticity, and at the same time it reduces the chances of puncture.

There will certainly be twenty new tires on the market next season, many of them pneumatics, and some of them are almost up to the Irishman's utopian idea—self-healing.

The First Use of Gutta-Percha in a Cable.

IN the current discussion of the early history of insulation, in several electrical journals, many facts of interest have been brought out, showing that experiments in this field occupied the attention of many scientists before the discovery of the use of gutta-percha, which first made insulation on a large scale practicable. The first transmission of an electric impulse through a wire is believed to have occurred in 1730, in an experiment by Stephen Gray, in London. *Scot's Magazine* published a letter signed "C. M.," dated at Renfrew, Scotland, February 1, 1753, containing what is supposed to be the first definite proposal to employ electricity for the transmission of intelligence. The same writer appears also to have been the first to make the suggestion of enveloping the conductor in an insulation coating, to prevent the "electric fire" from being "entirely drained off in a few miles by the surrounding air." His advice was to "lay over the wires from one end to the other a thin coat of jeweler's cement."

Cotton and silk threads and other materials were used for insulating in the electrical experiments which followed, but the subject of insulation, on the whole, appears to have made little progress for more than half a century. As "Sam Vyle" writes to the London *Electrical Review*, from Georgetown, Demerara :

> "Sturgeon in 1825 did not know how to insulate wire, or he never would have wound his electro-magnets with *bare* copper, with one layer only. The first thing Professor Henry, of America, did to improve the electro-magnet was to use insulated wire."

The insulating material used by Joseph Henry, by the way, was silk. Those who are continually looking for reasons for pride in American scientific attainments will be interested in knowing that from the experiments of Henry, in 1828, the advance in the field of electrical insulation on this side of the Atlantic was steady. In this connection it

is of interest to quote from the New York *Electrical Engineer* of October 14:

"It is not so generally known as it deserves to be that the first submarine wire insulated with gutta-percha ever laid in the world was constructed by Dr. John J. Craven, of Newark, N. J. With the assistance of his wife, he covered a piece of No. 16 copper wire by hand with gutta-percha. This insulated wire, which was about fifteen feet in length, he experimentally submerged in the water of Bound Creek, a small tidal stream crossing the present line of the Pennsylvania Railroad midway between Newark and Elizabeth, N. J., and connected it in the circuit of the Morse line between New York and Philadelphia. This experiment, which was entirely successful, was made about the middle of September, 1847. Dr. Craven afterwards submerged a similar wire for the Magnetic Telegraph Co. at the Passaic draw, near Newark, which was followed by the manufacture and laying of a cable a mile long across the Hudson River by the same company in the line of the Cortlandt Street ferry. This was a No. 12 iron wire with three coats of gutta-percha. The first telegraphic communication sent through it was on June 15, 1848. The result of this undertaking led directly to the laying of a cable between England and France, which was successfully accomplished on August 27, 1850."

Electrical Insulation Without Rubber.

IN an article on insulating materials *Electricity* [Chicago] remarks that gutta-percha now costs as much, bulk for bulk, as copper, while India-rubber also steadily increases in price. "Rubber," our contemporary adds, "is the basic material of all the insulating compounds used by insulated-wire manufacturers in this country, and in the opinion of some very good authorities vulcanized rubber is the material best capable of withstanding the strain of the high-pressure currents which are so much in vogue with electrical engineers to-day. A considerable rise in the price of the prime material would therefore be a very unwelcome blow to the electrical industries."

Fortunately for the electrical engineers, however, according to the same journal, they have "other materials to fall back on for insulating their wires and cables. Paper, which serves so many purposes in so many industries, is, when perfectly dry, an excellent insulator. Dry paper is the only insulating material used in many cables now doing good service in this country. For telephone and telegraph work it has the additional advantage of low electrostatic capacity, the retarding effect on the transmission being less with dry paper than with any other kind of insulation. Paper also stands up well under heavy strains, and paper insulated cables for electric lighting have successfully withstood pressures of upwards of 11,000 volts. In London, Mr. Ferranti is using cables insulated with paper impregnated with a wax compound, under a working pressure of 10,000 volts. Heavy oil is another good insulating material, and a very successful type of cable is made with an insulation composed of cheap fibrous material soaked in oil, the whole being enclosed in a leaden pipe, a necessary protection for all insulating materials which readily absorb moisture."

ADVERTISING placed last year will not bring in orders to-day.

Experiments with Rubber Fibre-Ware.

NOT long ago a young manufacturer, who had had considerable experience in moulding paper and pulp, conceived the idea of treating the paper with rubber, in order to add to its waterproof qualities. His chief business at the time was the manufacture of paper basins. To make these he took manilla paper in thick uncalendered sheets, and after forming them over a wooden shape, and drying them so that they had the form of a basin roughly, he soaked them in a rubber solution to which was added a certain proportion of thick, heavy vegetable oil. His next process was to press the basin in a hydraulic press between steel dies. Then he covered them with a rubber paint, in which was a small amount of collodion. He next put them into a heater, and gave them twenty-four hours of heat at a temperature of about 180° F. Somewhat to his surprise the goods treated this way came out wonderfully tough, durable, and absolutely waterproof; nor did the small amount of rubber that he used increase the cost to any considerable amount. So ready a market did he find for these goods that he tried making others of a similar nature. He made photographers' trays that bade fair to drive the hard-rubber trays out of the market. He manufactured a white shade for electric lights that was very highly spoken of. Indeed some of the electric-light men told him that 33 per cent. of their porcelain shades were broken in shipment; and that his without question would become popular. Waxing more ambitious, this young man proposed to make paper barrels, treated in the same way, and for that purpose began to experiment. He found in the course of his search that there were several methods already in vogue of paper-barrel making; that there was the English plan, in which the paper was moulded over a form largely by hand, and after being shaped and dried, is covered with hoops. It is then painted with a waterproof composition made of linseed oil and resin for ordinary barrels, or higher-grade varnish for special barrels. He found that this barrel can be made for six cents less than the wooden barrel. Part of this low price, of course, is due to the cheap English labor. He found also a machine, of American make, a very complicated, elaborate and costly mechanism, that pumped the pulp into a huge mould, forced out the water, and pressed the whole barrel, except the heads, into shape at one process. The trouble with this manner of work, however, was the fact that the machine seemed to be constantly getting out of order; and it was rumored that the company had spent a hundred thousand dollars vainly, in trying to perfect it. He learned further that in one of the Western States a prominent business man had another scheme for making paper barrels, in which he had sunk a hundred thousand dollars; because his finished product, although tough and durable, warped so terribly that it was practically useless. He therefore invented a scheme of his own, which was somewhat similar to the English plan, but produced a rather better article. He rolled his paper about a form shaped like a barrel, treated it with the rubber solution, drove on the hoops, and, removing his form, headed the barrel up. Two of these barrels were sent from one end

of the country to the other, nearly a score of times, loaded with marble flour, and did not leak in the least. Everyone predicted that the rubber fibre would be a conspicuous success; but about this time the young man reached the end of his money, and having too many irons in the fire, was forced to abandon his experiments, and there the rubber fibre-ware died.

Combining Gutta-Percha and India-Rubber.

AN inquiry has reached the office of THE INDIA RUBBER WORLD as to whether gutta-percha tissue is made of pure gutta, and also, whether rubber is ever combined with gutta-percha.

In some cases, replying to the first question, the tissue is made of the purest and best gum, in others it is of a mixture of various qualities of gutta, often containing a large percentage of adulterants. There have been, since gutta-percha was first known to commerce, many combinations of the gum with rubber. Although this must have been known, the British Patent-Office granted a year ago a patent to a Scotchman for compounds of gutta-percha and India-rubber. After speaking in his claim of the lack of elasticity in many articles made of gutta-percha, he goes on to state that it is well known to practical manufacturers that gutta-percha and balata are radically different from India-rubber; that the former two possess great toughness and hardness, with a small degree of elasticity, and that a slight heat will put them in a plastic condition without changing their properties, so that when cool they retain their structural form. On the other hand unvulcanized India-rubber has great elasticity and little hardness, and its nature has to be changed by vulcanization to make it permanently retain the elastic forms given to it.

This Scotchman's invention, therefore, consists in combining the two gums so that the finished product shall retain the hardness and stability of form that gutta-percha possesses, and at the same time possess somewhat of the elasticity of India-rubber. He goes to some length in his declaration, in describing the ordinary process of washing, drying and masticating the rubber, as well as the processes for cleansing gutta-percha. When ready to combine the two gums he spreads it into sheets, doubles one upon the other and passes them again and again through one of the rollers of an ordinary mixing-machine, mixing them very thoroughly while both are heated and moist with hot water. When the rubber is thoroughly incorporated with gutta-percha these compound sheets are cut up and passed through a masticator. The inventor prefers what he terms a single-roll mixing-machine, with lateral-angled mixing-vanes, which do not tear the material. The compound is then mixed either in steam or hot water, at a high temperature, say at 240° F. This treatment results in a tough, plastic doughy compound, that has all the toughness of gutta-percha and much of the elasticity of India-rubber. The inventor recommends that one pound of raw rubber be incorporated with four pounds of gutta-percha or balata, or about that proportion. The India-rubber gums that are used for this purpose are chiefly of poorer grades, such as African, Borneo or Centrals. He claims that these compounds are better than the best gutta-percha or balata compounds used to-day in making belts, chemical vessels, boot and shoe soles, and especially for insulated wires and cables.

One point that he gives special prominence to is the fact that gutta-percha has a remarkable power of cohesion or shrinking on other materials—as for example, wires that are to be insulated—and that India-rubber has not this most desirable quality, but that this important compound is equal to gutta-percha in its cohesiveness. He adds that crumb, or what we would call recovered rubber, could be used to good advantage in this manner, and that a variety of pigments may be used with the new compound.

Mixing Rubber With Leather-Scrap.

IN the first number of THE INDIA RUBBER WORLD a brief article appeared relating to the combination of leather-scrap with India-rubber, for the purpose of making an artificial leather. A gentleman well known to the rubber trade, and one who has wide experience, at once challenged its statements, and said that rubber could not be used in connection with leather successfully. In fact his scorn of the process was expressed in exceedingly pungent terms. The writer of the first article was not at that time prepared to back up his statements effectively; and so the matter dropped. He happened in the office the other day, however, with a process now used in England for this very combination; and his description of it is published herewith.

The initial processes in the manufactory that he got his information from were carefully screening the leather-scrap, cleansing it from foreign substances, and from grease, and then reducing the leather to a fibrous powder. The machine that does this last is known as a disintegrating machine, in which a surface of knives is formed after the fashion of a rasp, and so arranged that two opposite surfaces work in opposite directions. This machine may consist of a pair of rollers moving in opposite directions, or in the same direction, one roll running faster than the other. The rending surfaces of the rolls are formed with teeth like a rasp, the faces of these teeth facing in opposite directions so that the process will be rather that of tearing than of grinding. This leather powder obtained in this manner is next carefully mixed with a thin rubber cement, the solvent usually being naphtha. Sixty parts of leather fibre are used to 40 parts of the cement. When these are thoroughly mixed, 3 parts of glycerine are added, and 10 parts of devulcanized rubber. This is usually mixed on a rubber-grinder, the rolls being rather far apart to prevent the destruction of the fibre of the leather powder.

Another method for this employs a machine having a motion somewhat like that of a mortar and pestle; the motion being a circular rubber motion rather than that of continuous pounding. The compound of leather-scrap, rubber, glycerine and shoddy is next placed in moulds, and pressed to whatever thickness the sheet of leather is to be. After being pressed in shape, it is dried for a few hours,

and is then put on a canvas sheeting, and run through rollers, which are somewhat like ordinary calenders, only smaller. It is then stripped from the canvas backing and allowed another drying. This operation of rolling and drying is repeated nine or ten times, until the requisite thickness, hardness, dryness and finish are obtained ; which is the third or fourth day from the beginning of the process. The result is then ready for use in shoe work, and other places where an ordinary grade of leather would be used.

Where this compound is to be used for the manufacture of a thin leather cloth, the amount of rubber solution is largely increased, and the glycerine is entirely eliminated. This compound, if properly mixed, may be spread upon cloth for an artificial leather cloth, either by a calender or by a knife spreading machine. After the spreading, calendering and finishing, the cloth is hung to dry for two or three days. It may, however, be run through embossing machines, or stamped with imitations of any kinds of leather. A certain amount of pigment can be put also in the compound, when mixing, so that a variety of shades may be produced. As in this process the compound is not vulcanized, very bright colors and handsome effects can be secured.

This cloth has been used in chair-coverings, carriage-cloth, travelling-bags and trunk work, book-binding, horse-cloths, dressing-cases, music-rolls, and many other articles. It is said that the yellow sock soles largely used abroad are made of this compound, in which a little yellow ochre is added to the mixture, to give it the right color. The cloth after drying is stamped out in the shape of the soles, and they are then ready for market.

The Making of Rubber-Shoe Lasts.

LASTS for rubber shoes have been and are made of various materials, but chiefly of maple. The maker selects his stock four or five years in advance of the time when it is to be shaped, so that it can be thoroughly seasoned, one of the most important steps in the manufacture. The maple is bought in the shape of blocks and piled up in the yards. If it should be used when green the moisture which would exude from the last under the great heat used in the manufacture of shoes would blister the goods. The grain of the wood in the lasts runs with the length, and whatever shrinkage there is takes place in the width. The heat used in the making of shoes is 280° and in spite of the seasoning process mentioned there is a constant, although small percentage yet going on, so the form is a little larger at first than the standard, and after some months of use the variation has passed the line and is on its way to a smaller width. "F" by this time has become "M." Then the sulphur used in vulcanization is constantly being absorbed by the wood and in time the last becomes brittle, and is eventually utilized as fuel, its life being about two years.

Some of the largest concerns will need a constant replenishment of forty or fifty thousand pairs per year. On account of the large amount of capital required in the business, due to the large accumulation of stock necessary, there are few last-makers, and needs are provided for a considerable time in advance. The factories are located principally in Malden and Brockton, Mass., with one in Central New York. The making of lasts for the ordinary leather shoe is comparatively a simple affair, and the number of makers is not so limited. From time to time various substitutes for maple have been suggested, most of which have been abandoned. Rubber-men, while they would like to reduce the great waste in this direction and get more uniformity in sizes, are not disposed to experiment a great deal in so intricate a matter as shoe-making. Stone has been used for lasts, and compositions of earthy matter, but the difficulty in these has been to get the proper shapes and also to limit the cost to a reasonable figure.

Metal has been used to some extent with, it is said, good results. The difficulties in the way with new material are to find something that great heat will not contract or expand, and that will not be so good a conductor of heat as to burn the shoes. Also it must not be affected by the various compounds used in the rubber manufacturing. To obtain all these qualifications is no easy matter, and so the maple last, with all its crudities, holds sway. Maple lasts cost from 50 cents to $2 per pair for shoes ; for boot tree and last as much as $5 is asked. The peculiarity of the boot and shoe trade this fall is that there has been so large a demand for boots that orders have to be turned down simply because manufacturers did not anticipate this unexpected call, and did not provide themselves with lasts which at this late day they cannot obtain. Last-manufacturers are invariably behind orders, and the latter have to be filed months in advance.

Advantages of Rubber-Soled Shoes.

IN winter delicate people must be well shod for changing seasons. Before the need of warmer clothing is felt, the damp chill striking through the feet is felt through limbs and body, stiffening the cords and the gait, fostering a general ache of the muscles, which tends to anything but cheerfulness of feeling. What is to be done ?

The safe thing is to have a rubber-soled shoe, which leaves the upper part of the foot dry and free to the air. I never expect to see again the eminently sensible walking-shoe which appeared in Boston shops six years since, which had a rubber sole inlaid on the tread, which was the most elastic, comfortable shoe for country walks, gardening, and snowy days one could ask. There was no "rheumatics," from digging in flower-borders or facing damp October walks with those boots, I promise you. The trouble was they were too good (that one pair isn't worn out to this day), and so they were taken out of sale for the benefit of poorer stock. But one can have a sole cut out of thin, pure rubber, and cemented to a thin boot for fifty or seventy-five cents a pair, and save endless internal troubles from cold feet. Do you know how much easier living is with feet duly shod with elastic soles ? The ease of getting

about on them takes a third of one's weight off. Who can estimate the relief to back, sinews, and leg-muscles?

All drivers know that city streets and pavements wear out the feet and strength of horses far sooner than the country roads. Are pavements and floors any kinder to women? I don't believe any one who reads ever thought about it, but the constant stepping about non-elastic floors and sidewalks must wear greatly on the limited strength of a woman. Earth gives, the mountain sod is elastic, the woodland, the grassy turf yields, thus saving the foot which treads them.

Tiles, marble, stone, cement, oil-cloth do not give way, and all impact of the tread returns upon the muscles and nerves in a cruel way. This constant jarring, unnoticed at first, works strange mischief in woman's organisms, and the cause is seldom suspected. Wood floors and sole-leather heels are elastic beside stone pavements and metal heels but not sufficiently so. One feels the difference very soon in climbing iron or stone stairways, which take the life out of humanity.

But to know the luxury of footing, and how much relief is possible to the strain of life, never dreamed of, one should put on the new shoes with elastic seam. It is just a little thing, an eighth of an inch or less of pure rubber, let in at the ball of the foot, between sole and upper, detracting nothing from the fit of as shapely shoes as are sold, but making all the difference of ease and springy step, and taking the strain off so many painful muscles. Housekeepers, clerks, car-drivers and floor-walkers know what it is to feel that every step drives the heel into a socket of sore flesh about the ankle, and that again sends the bone of the upper leg against the hip-socket with a jar that tells painfully on the sore and quivering flesh of the front and back muscles of the trunk. I am not writing anatomically so much as telling how walking feels on unelastic floors and pavements, though of inlaid woods, marble, or Mentoni tiles. There's a deal of suffering in mute endurance in our costly thoroughfares. Mute, because no one can pity who has not felt the pain. I knew it and have known it year after year, and can appreciate the relief, the saving of muscles which these rubber additions to the sole afford.

This is not the latest improvement in foot-gear I have to tell of. Have you ever noticed the accidents which happen on the marble and inlaid floors, and shops as well as on slippery ice? There is not a day that people do not measure their length on the smooth marble, or slip and bring up with a strain that wrenches every ligament of their bodies. Add to this the dreadful slipping of heels worn smooth on the edges of steps or thresholds with shock and wrench, and you have quite a list of risks to run before the ice sets in, with its dangers to life and limb.

There is a ladies' coffee-room I know, whose marble floor is a nervous horror to customers, with its slippery surface, and I have had so many shocks of the sort with lasting injury, that seeing the sign of "Rubber Safety Heels" in a basement shop-window, I dived for them at once. The invention is a block of pure flexible rubber let into the heel so as to save the wear of leather, slipping, and jar of spine. Though a dollar for a pair of heels seems rather an addition to the cost of shoes, persons obliged to be close economists find nothing so well worth the money, hardly more for the safety than the spinal relief in walking.

Dr. Bowditch, of Boston, as widely and well-known as any physician in this country, is quoted as saying half the spine diseases he meets are caused or aggravated by high, hard heels, and he has given the rubber heel his emphatic commendation. With all possible respect to the doctor, however, those who try the rubber attachment to shoes need no other commendation than their own much relieved spines.—*The Quebec Chronicle.*

To Remove the Smell from Rubber Goods.

TO THE EDITOR OF THE INDIA RUBBER WORLD: I noticed in the last issue of your paper a request from a correspondent for some process for deodorizing vulcanized India-rubber. Although in the mechanical-goods line, we have very few calls for such a product, as our customers care more for the lasting qualities of the goods than they do for the odor. I have in my possession an abstract from specifications of a patent granted to Miss E. M. Freeley, of Plainfield, N. J., for the manufacture of articles of leather, in which she claims to be able to deodorize rubber completely. After speaking of the strong smell of rubber garments that comes partly from the rubber, and in part from the sulphur, benzine, and rubber shoddy, she says: "The object of my invention is to destroy the disagreeable smell in vulcanized rubber and waterproof fabrics, and to give to the goods a wholesome odor that will be objectionable to no one."

She further claims that the process, besides destroying the odor, toughens the goods and renders them less liable to softening by acids. The method used is to take a solution composed of salicylic acid and alcohol, preferably in the proportion of twenty grains of salicylic acid to half a pint of alcohol, and dip the article to be deodorized therein. This solution, it is claimed, entirely deodorizes it without putting it through the next process. This additional process, however, is said to toughen the goods, and make them more readily absorb any perfume that may be added. This has also great deodorizing qualities. A hot or cold solution is made of fifty pounds of oak bark, fifty pounds of hemlock bark, fifty pounds of sumach bark, nine hundred gallons of water, salicylate of soda in the proportion of twenty grains of salicylate of soda to every two gallons of the solution of barks and water, and a large tablespoonful of Russian jachten extract, dissolved in one pint of alcohol, half a pint of ether, and five grains of salicylic acid. Into this bath is put the rubber to be deodorized.

Of course, these proportions may be varied somewhat. If one of the barks, however, be omitted from the solution, the proportion of the others should be correspondingly increased. When the article to be deodorized has been subjected to this process and the unpleasant odor has been entirely destroyed, it has a sweet and wholesome perfume, and is far tougher and more durable.

J. H. H.

Boston, Mass., November 10, 1891.

New Process of Rubber-Drying.

WHETHER or not any improvements can be devised upon the present crude methods of coagulating India-rubber as practised in the forests by native gatherers remains a question for discussion and further investigation. There is no doubt that the scientific examination of the natural juices of the various rubber-bearing plants would in some cases lead to a better determination of the acids needed for the proper treatment of the juices than is likely to be arrived at by ignorant and unprogressive Indians. The agency of the palm-nuts used in smoking rubber in the Amazon valley is in affording the acetic acid needed to neutralize the alkaline character of the Pará gum. Enough is known to show that all the varieties of rubber milk do not yield with the same readiness to the same method of treatment; indeed some varieties, even when worked by the natives alone, have never been smoked at all.

In the September number of the *Bulletin Technologique de la Société des Anciens Elèves des Arts*, M. Ph. Rousseau publishes an interesting monograph on India-rubber. In the course of his remarks on the various methods of coagulation, M. Rousseau examines the chemical process recently introduced on a large scale by the Orinoco company. This process merely consists in mixing the milk of the *Hevea* with sulphuric acid and carbolic acid. Commercial sulphuric acid coagulates fifty-five times its volume of gum, and carbolic acid acts as an antiseptic to the coagulated juice, improving its keeping qualities. The chemical process of coagulation has the undoubted advantage over the method of smoking of diminishing the proportion of inferior rubber collected, the dust and vegetable dirt inherent to the old process being in a large measure avoided. The labor requisite is also less. Nevertheless, M. Rousseau is in doubt whether the rubber treated in this way will prove as elastic and acid-resisting as that coagulated by smoking. He argues that the molecular grouping of the rubber coagulated by the old Indian evaporative process, by the smoke of fires, and by chemical action, is very different, and cannot but result in marked differences of physical and chemical properties.

A reader of THE INDIA RUBBER WORLD writes to ask whether the rubber juice as obtained from the forest could not be transported to a more suitable locality for its manipulation, there to be coagulated under careful supervision, with the result of producing a pure article of rubber. This long has been a topic of discussion. Thus in David A. Wells's "Annual of Scientific Discovery" for 1854 occurs this paragraph:

"LIQUID INDIA-RUBBER.—A new method of preparing the gum of the India-rubber tree has recently been brought out. The milk as drawn from the tree is bottled in large glass bottles or demijohns. A preparation of some chemical nature (understood to be a salt of ammonia) is mixed with the milk, and the bottles are securely sealed. In this way the gum is exported. It curdles twenty-four hours after exposure to the air, and forms a pure, white, solid and remarkably strong rubber."

The publication quoted fails to give any clue to the parties interested in this method of rubber exported, and it is safe to say that rubber-men of to-day will scarcely recognize in the paragraph the work of one familiar with the business of rubber-gathering.

The Non-Blooming Problem.

BY GEORGE F. GREGORY.

SOME time ago I ran across a young man who was haunting rubber-mills attempting to sell a secret for the prevention of bloom on rubber goods. As in the past I have met many men of this kind, it did not seem worth my while to purchase his idea, but at the same time it started me to looking up the question. I found that the manufacturers of rubber boots and shoes and rubber clothing had for years been making goods that were absolutely free from bloom. Their products, to be sure, are cured in a dry heat, and have a coating of linseed-oil varnish, but they tell me that even their dull-finish goods are absolutely without efflorescence. This, I gather, is reached largely by reducing the percentage of sulphur used in vulcanization, and largely increasing the amount of litharge that is used. It is said that in some kinds of mould-work this can also be done. A curious black powder that was sent me by a chemist in England for this use I found quite successful, and for some time was ignorant of what I should call it. The name supplied by the chemist was "burnt hypo." A friend who is in the rubber business told me later that it was hyposulphite of lead; that is, a chemical combination of lead and sulphur, formed by the intermixture of the two, and a long heating and stirring process, covering several weeks. The use of this showed me that while in many cases the hypo vulcanized without bloom, yet at times there appeared a slight efflorescence; and that this could not be guarded against except by carrying the heat to a point where there was danger of burning the goods. From this I argued that there was a certain percentage of free sulphur almost always present in the compound.

While at work on the hypo a gentleman very familiar with antimony products suggested that I try golden sulphuret of antimony as a non-blooming compound. This I did, but the goods burned so easily when a high degree of heat was used, that I did not dare try to vulcanize them, and of course there was a resultant bloom. I find that some manufacturers, however, make these goods, and put them aside for a number of months, when the small amount of free sulphur that is present works out, and is washed off, after which the goods show no signs of efflorescence. In the progress of my investigations a gentleman handed me a curious light-brown substance which he designated as amorphous sulphur; and in connection with this, he gave me a fragment from a patent specification* relating to its use. It said in substance, that pure sulphur and India-rubber will by the usual mode of vulcanization combine. But the former will effloresce from the moment it leaves the vulcanizer. This is nothing else than a process of crystallization. To prevent this, sulphur must be

*This is evidently from Dr. Wilhoft's Patent for Rendering Sulphur Amorphous.—EDITOR.

rendered amorphous. This can be done by heating the compound to a heat of about 330° F., in vulcanizing, or preferably by using a sulphur preparation in which the sulphur is already in a permanent amorphous condition. When this compound is used instead of sulphur, the ordinary low heats are sufficient to chemically combine the sulphur and the rubber and prevent blooming. Sulphur may be rendered lastingly amorphous by fusing it with any fatty, greasy, resinous, or turpentine-like body, by the aid of heat under certain conditions. In other words, the sulphur must be heated to such a degree that it becomes brown or so thick and tar-like that it will not flow from the vessel when upset. This renders the sulphur amorphous temporarily.

Now the greasy, fatty, resinous, or turpentine-like body is gradually added to it under continuous stirring until the samples of the hot mass upon cooling show no symptoms of crystalization. When this point has been reached, the mass is poured out, and after cooling, is broken up and ground. This preparation should have the color of moist clay, and be of a pungent, sulphurous odor. It is best to use one pound of sulphur to one-fourth pound of Canada balsam in making this compound, although equal quantities may be used. The quantity of sulphur compound to be used in vulcanization depends upon the proportion of sulphur that the compound contains. Ordinary usage will call for from 6 to 7 per cent. of the weight of rubber.

Asbestos in Connection with India-Rubber.

THE new catalogue of Louis Wertheim, of Frankfort o/M., Germany, manufacturer of asbestosgoods, contains some interesting facts regarding the history and uses of this peculiar material. Asbestos differs from nearly all other minerals in being fibrous and textile, dividing into fibres resembling in delicacy those of flax and silk, and can be spun and woven like any other textile fibre, giving a yarn or cloth, entirely fire-proof and acid-proof. Although known in Egypt and elsewhere three thousand years ago, the practical use of this material in considerable quantities has been delayed to the present age.

The finer kinds of asbestos, which are pure white and silky with strong fibres, are comparatively rare and expensive; (the same being free from silicic-acid and metal-oxides) and in consequence of their lubricating qualities are particularly valuable for technical purposes. These kinds of asbestos have only been found in Canada and some parts of the United States. The asbestos found in Italy, Switzerland and Germany is colored, grey and yellow and more compact. These qualities are much cheaper than the American; but being far inferior their use has largely ceased.

Since the discovery of the American asbestos the use of the kinds previously found in Italy has largely fallen off. Asbestos-mining in the remainder of Europe has, so far, amounted to little. The principal qualities of the American asbestos chiefly consist in being absolutely indestructible even when exposed to the action of any known acid and its possessing at the same time in the highest degree that peculiarity of a self-lubricator, viz.: a soft, greasy or soapy feeling, which has brought plumbago, soapstone and chalk into favorable notice.

The use of asbestos in connection with India-rubber is now practised in various directions. Asbestos and India-rubber woven sheeting, for instance, consists of asbestos woven cloth, coated on both sides with India-rubber and then vulcanized. It is used as a substitute for the asbestos millboard for packing for steam-joints and in other situations where it is desired to resist both heat and moisture, while affording a high degree of elasticity. Asbestos and India-rubber woven washers are also made, and asbestos and India-rubber woven tape, for making steam- and water-joints. Asbestos rolled cloth packing is made both with and without India-rubber core. Asbestos block-packing consists of an India-rubber back, upon which there are built up edgewise a number of layers of asbestos-cloth. Sufficient elasticity is thus imparted by the rubber back, whilst great durability and protection to the rubber is insured by the use of asbestos.

The New Substance, Bucaramanguina.

THE Bureau of American Republics, through its director, William E. Curtis, has favored THE INDIA RUBBER WORLD with a report of the discovery of a new mineral substance, not unlike asbestos, near Bucaramanga, in Colombia. Dr. D. Eloy Valanzuela, the distinguished geologist of Bogota, has given the material the name of bucaramanguina. It is the color of amber, is perfectly transparent, and is incombustible. It can be reduced to pulp and moulded into light fire- and water-proof tiles for house-covering; it can be woven in pliable fire-proof cloth or shaped in casques suitable for firemen's wear. A white varnish can also be extracted from this substance.

"It is said to be superior to asbestos," Mr. Curtis writes, "and has been recently on exhibition in Bogota, and is now undergoing experiments which the press of Colombia speaks of in the most enthusiastic terms. The article has not been marketed, as I understand it, but will be when the companies now organizing to mine it are completed and under way, provided continued experiments give equal results with those already made."

The Making of Goring.

IN the making of goring the materials used are rubber and silk thread, cotton and wool yarns. The yarns are dyed at the mill and each of the materials are spooled. From the spools each material is made into warps, and then with a loom the fabric is woven. The quality of the goring then is in the hands of the weaver who must be ever watchful to see that no tension is allowed to be placed on the rubber thread for if this happens the shoe manufacturer cannot stitch in the goring quickly enough to prevent the ends of the strands from drawing out of line with the rest of the fabric. Efficiency also consists in getting the threads just strong enough to bind firmly on the ankle giving ease to the wearer and permanency to the fabric.

The Rubber Trade of Ecuador.

THE barter of goods for crude rubber on the coast of Ecuador, carried on by trading companies as an accessory to other branches of their business, is variable and intermittent. Guayaquil is the most southern port on the west coast of South America from which any rubber save in sample amounts is obtained; that from Peru finding its way down the Amazon, which river drains Ecuador only in a limited degree. The rubber from Ecuador is in flakes and lumps, of the *Castilloa elastica* variety, and of a very inferior quality. "Guayaquil strip" to-day is worth as little in the American markets as any grade with the exception of some of the African sorts. That of the better sort is of a whitish color, the inferior being porous and the pores filled with a black disagreeable liquid which carries with it an almost indelible stain. It is a rubber very little used abroad, the imports into Great Britain being very small.

The difficulties of gathering rubber in Ecuador are apparent when it is considered that the country has few water courses and a very narrow strip of coast-line before the Andes are reached. The state of the roads can be imagined when it is understood that Quito, the capital, is pierced geographically by the Equator, and yet from its altitude enjoys a climate of perpetual spring. Of railroads there are 57 miles, and only one highway 115 miles long, that being intended to connect Quito and Guayaquil, but the completion of this work has been abandoned. The fact remains that during the seven months of the rainy season, Guayaquil is shut off from all traffic with the interior, and in the other months the primitive mode of transportation of heavy loads by gangs of Indians is practised. Statistics of the value of the crude rubber product of Ecuador are not at hand, but the gross exports in value of hides, rubber, ivory and nuts in 1890 were less in value than $2,700,000, of which caoutchouc probably was the smallest item. It is an untravelled country and little is known of the modes of gathering rubber, the Indians forming almost the entire population of the interior, and they generally refuse all information about themselves. The trading companies sell in barter dry-goods, hardware, drugs, ready-made clothing, wines, etc. As this country becomes better known, and communication with the interior is improved, it may become more important among the rubber-producing countries.

The Vapor Cure as Practised Abroad.

TO THE EDITOR OF THE INDIA RUBBER WORLD:—I notice in the last issue of your paper an article on the vapor cure of rubber garments, and it occurs to me that it was quite possible that a brief description of one way of manufacturing rubber clothing abroad might be of interest to your readers.

In one mill in which I was employed the machine for coating the cloth consisted of a series of rollers mounted in a stationary frame. Between the two upper rollers, which were slightly separated, was placed a diagonal knife which pressed upon the surface of the cloth that passed over the rollers, thus making a trough for the reception of the rubber compound. Just in front of the stationary frame was arranged a travelling frame, in which was contained a roller that could be adjusted at any distance from the fixed frame. The cloth being joined in an endless band, was passed over the rollers of the stationary frame, and over the roller in the travelling frame, and, being drawn tight, was ready for coating. The India-rubber solution was then poured into the trough formed by the pressure of the knife. The roller was set in motion and the endless band of cloth was gradually drawn beneath the knife. When this had been once coated it was customary to remove the knife, clean it, and putting it back again to pour the rubber solution on the other side of it, and reversing the motion of the rollers add another coat to the fabric.

In vulcanizing the cloth so coated, we hung a trough by means of ropes over the poles so that it could easily be raised by winding the other ends of the ropes. In this trough was placed a vulcanizing roller, which as it revolved took up the vulcanizing liquid from the trough, and brushed it upon the coated surface of the cloth. A similar trough and roller placed further along were used to finish the rubber surface. G. E. MENDELL.

Brooklyn, N. Y., October 30, 1891.

Tannin and Electric Goring.

TO THE EDITOR OF THE INDIA RUBBER WORLD: I have read your October issue through and have been much interested in the articles contained in it, including that on "The Durability of Elastic Goring," by Henry Drummond, quoted from one of your exchanges.

The troublesome agent that affects Mr. Newcomb's gores in "dongolas" evidently is tannin, which is the same thing as tannic acid, and which he cannot get away from. Another possibility is butyric acid, derived from the decomposition of any animal oil or grease used as a dressing. It is this acid that makes old boots and shoes "smell so." Perspiration plays a part in the destructive process, may be, by acting as a solvent of tannic acid. Butyric acid can get in its work unassisted. M. D.

Frankfort, Ky., October 25, 1891.

Colchester Boots at a Fair.

THE Colchester (Conn.) Rubber Co. made an attractive exhibit at the Conductors' Fair at New Haven, held about the middle of October. It was contained in the time-honored showcase of the old Hayward Rubber Co., which came into the possession of the Colchester company when they purchased the Hayward plant. It is a very handsome piece of work, made of mahogany and plate-glass, with elaborate silk linings. Two-thirds of the space was filled with the miniature rubber boots which have proved such a taking advertising device for the Colchester people, about 5000 pairs being shown. This was probably the largest number of boots ever shown in one pile. The plan was to have the people guess the number of boots in the case, those guessing nearest the right number being

entitled to certain prizes offered by the management of the fair. It proved a popular feature, and is said to have netted more money to the fair than any other exhibit in the building.

Pointers for Advertisers.

BY ROBERT GRIMSHAW.

SUCCESS depends upon three things—a good article, determination, and a sensible scheme of advertising. If you have these three, success should be yours.

* * *

You must not expect the public to tear things up by the roots getting or enquiring for what you advertise, the day that your announcement appears in the paper. There are more than a dozen reasons why they will not. They may not want the kind of article that you advertise; may not have the money to pay for it; may be too busy at other things, to order, or even to think about ordering. It may not be the season; there may be a very good article in the field at the time; they may have been bitten by a poor one of the same general kind, shortly before; and so on.

* * *

It is patience and perseverance that make the mulberry leaf satin.

* * *

Wanamaker said some time ago: "I spend $35,000 a year in advertising. I make money by it. Advertising is the leverage with which this store has been raised up. I do not see how any large and successful business can be done without liberal advertising."

* * *

The first £100 worth of advertising that Holloway gave his pills, brought him just two orders for one box each. But knowing that he had a good thing and that there was a field for it he kept on, with the result of making a fortune through advertising alone.

* * *

"The advertiser's road to fortune lies between two lions; the one, inexperience; the other, impetuosity."

* * *

As to the size of a newspaper advertisement Smith says with reason: "The modest single inch advertisement stands a chance of being seen, and if only one out of every 10,000 readers will answer its appeal, a profit would probably be realized. Its proud neighbor, with half or whole page announcement, no doubt demands one order from 1500 readers, and in most cases easily gets it."

* * *

"What is the secret of your success?" asked a friend of a business man who was a large advertiser.

"That's just it," replied the merchant, "there is no secret about it; I am the biggest advertiser in this line. There is nothing secret about my business."

* * *

A good feature to embody in an advertisement is the statement that articles ordered by mail will be sent postpaid or express paid. Prepayment of carriage costs but a very small proportion of the value of most articles; much less than a commission of a salesman or a discount to a local dealer.

* * *

Seneca says: "He who asks timidly courts denial." So with our advertisements. Don't be afraid to tell the world at large what you have, where you have it and all about it.

* * *

See to it that you don't give an order for an advertisement out of pique—as for instance, where you give one to a poor medium at cut rates while you are smarting under the refusal of some other to take less than its regular price.

* * *

A pictorial advertisement has the advantage of being more readily seen, and more readily remembered than letter press covering the same space.

* * *

Sometimes when the public may be thought to be tired of an advertisement, that is, when every one is supposed to have seen it, and read it about as often as he is likely to—it will pay to turn all that is black into white, and *vice versa*.

The Star Rubber Co.'s Plant for Sale.

DOUBTLESS by this time most of the rubber manufacturers have received notice of the receiver's sale of the property of the Star Rubber Co., which is to take place on November 18. No doubt, too, many have received passes to permit them to look the property over. As is well known, the plant is a very large one. It is situated on twenty-seven acres of land in the city of Trenton, the buildings consisting of the rubber-mill, a large barn and two brick dwelling-houses. The mill was fitted up for mechanical-rubber goods, and had a capacity of from 30,000 to 40,000 feet of hose a day, beside which large quantities of rubber belts, door-mats, packings, and general mechanical goods were manufactured. The buildings have a floor space of about 60,000 square feet, and it is said that the whole plant cost the company $275,000. A full list of the machinery and personal property is printed and comes with the receiver's letter. The property is to be sold in six parcels, and it is desired that the mill should be sold as it stands, with all the machinery ready for starting up, and all in one parcel. That a purchaser will come forward for the whole of this great plant on November 18 does not seem likely, although it would be a pity to sell the machinery out piecemeal, as is so often done in rubber plants that are the remains of a disaster as complete as that which overwhelmed the unfortunate Star company.

THE demand for seamless wool boots, or the "combination," is becoming very large. For a long time one set of manufacturers furnished the leggings, and another the shoes, with the result that a good fit could not always be had, but with the concentration this difficulty has passed away, with an advantage to all concerned.

Letters to the Editor.

TO THE EDITOR OF THE INDIA RUBBER WORLD: We should be very thankful if you could send us the address of the makers of packing like the enclosed sample. Please return the sample. Thanking you for your service, Yours truly,

NORDISK GUMMI & GUTTA-PERCHA COMPAGNI.

Copenhagen, Denmark, October 5, 1891.

[THE sample enclosed at first look appeared to be a white rubber compound wrapped about with paper. It was a quarter of an inch thick and an inch wide, and had a peculiarly nice finish. Upon dissecting it, however, it proved to be made entirely of a nice grade of light colored manilla paper, which appeared to be treated with paraffine or ozocerite. Inquiries therefore were at once directed to the paper trade. Several paper manufacturers here make paper and pulp packing, but so far have shown no samples that look exactly like the one sent; nor does it look like American work, but rather like a sample from some French manufacturer. At the last moment comes in further information, which is to the effect that the Otis Falls Pulp Co., No. 390 Congress Street, Portland, Me., are producing a paper packing which bears some resemblance to this.—EDITOR.]

Who Can Deodorize Sheet Packing?

TO THE EDITOR OF THE INDIA RUBBER WORLD: Can you kindly tell me how to treat sheet packing so as to make it *odorless*. I would like to manufacture a certain article out of this rubber, but find the strong rubber smell a great drawback. If you cannot tell me, could you kindly inform me where I could find out? Truly yours,

A. J. DE MERS.

Batavia, N. Y., September 28, 1891.

Three Questions From Providence.

TO THE EDITOR OF THE INDIA RUBBER WORLD: Can the so-called rubber plant used in green-houses, be put to any use except ornament? What care should be taken of it, and how can the growth of the plant be most speedily increased? Would like to see more comments and suggestions regarding city trade in wholesale and retail business. Did the Civil War in Chili affect the exportation of rubber in South America?

R. L. R.

Providence, R. I., September, 1891.

[1. As far as we know the rubber trees that the florists sell, and that are in so many rubber stores, are of no particular use. They are of course curiosities, and put in a window serve as advertisements, but should they all die in a single night it would cause no appreciable rise in the price of crude rubber. 2. Send us some comments. Our columns are always open to our friends. 3. The trade in manufactured rubber goods between the United States and Chili never was very large. We have heard no complaints from manufacturers and conclude that it has made little difference. Chili is not an exporter of crude rubber.—EDITOR.]

THE apron strings of an American mother are made of India-rubber. Her boy belongs where he is wanted.—*Oliver Wendell Holmes.*

Recent Rubber Patents.

No. 460,502.—Pneumatic Billiard-Table; Edwin L. McConaughy, Philadelphia, Pa.

The combination, with a table, a series of spaced and numbered pockets thereon, a vertical border-wall that is adapted to cushion balls, a glazed top plate, and adjustable legs, of a set of light balls, which may be rolled by a puff of air, and an air blower having a nozzle which will enter any of a series of perforations made in the border-wall.

No. 460,600.—Rubber; Justin B. Sargent, West Lebanon, N. H.

A rubber overshoe provided on its inner side at the counter and heel portions with thin strips of flexible material, said strips having open cut-out spaces which constitute air or suction chambers between the overshoe and the shoe of the wearer.

No. 460,606.—Electric Conductor; William Vogler, Somerville, Mass.

As an improved article of manufacture, an electric conductor consisting of two branches or wires, an independent semicylindrical insulation for each branch, and a re-enforcing strip interposed between said branches, upon the opposite sides of which the flat surface of the insulation rests, and an outer covering of insulation enveloping said branches, and a re-enforcing strip to secure the parts in place.

No. 460, 714.—Air-Valve for Inflatable Wheel-Tires; Edward R. D. Wolfe, New York, N. Y.

An air-valve, consisting, essentially, of a tubular cylindrical case, a perforated plug, and an elastic device for permitting the entrance of air, but closing automatically to prevent its escape.

No. 460,765.—Composition for Insulating Material; Elihu Thompson, Lynn, Mass., assignor to the Thomson-Houston Electric Co., of Connecticut.

An electrical insulating composition consisting of a fibrous mineral insulator, as a base, cementing insulating substance, such as rubber, and a lubricator consisting of an insulating material; the composition, for example, consisting of asbestos, rubber, and soapstone, or their insulating equivalents.

No. 460,825.—Dress-Shield; Isaac B. Kleimert, New York, N. Y.

A dress-shield comprising a covering of textile fabric having its top edge curved and its side and bottom edges straight, and a water-proof lining of double-crescent shape, of smaller size than said covering and having its concave curved edge fitting under the curved edge of the covering and its convex curved edges attached to the inner sides of the same at a distance from the straight edges.

No. 460,842.—Composition of Matter for Soles of Shoes, etc.; George E. Brown and John W. Blackwell, Wrenham, Mass.

A composition of matter for treating rubber, consisting of litharge, whiting, flowers of mephus, lamp-black, and a gritty substance equaling in weight the other ingredients and the rubber to which the mixture is applied.

No. 460,857.—Nursing-Bottle; Helena O. Flodin, Upsala, Sweden.

As an improved article of manufacture, a nursing-bottle, comprising a body of the configuration shown, in combination with a curved tube having a collar and projection, and elastic hood or cap having apertures in it.

No. 460,925.—Hose; Benjamin L. Stone, New York, N. Y.

A compound seamless-knit hose consisting of an inner seamless-knit hose having looped stitches upon its interior surface, an external seamless-knit jacket or hose having looped stitches upon its exterior surface and a rubber lining applied to the surface afforded by the looped stitches upon the interior of the inner hose.

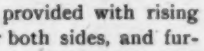
No. 461,160.—Sanitary and Protecting Hoof-Pad; George R. Meitlzer, Cincinnati, Ohio.

A hoof-pad, comprising an imperforate rubber body, an elastic frame inserted therein and serving to stiffen and support the body of the former, said frame having lugs to retain the pad in

position and eyelets to permit its quick adjustment in the manner described, a metallic layer embedded in said rubber body, a horizontal felt layer on said rubber body serving as a ventilator, as specified, and a heel-protector held partly in place by the pad and provided with means to hold it up against the heel of the horse's foot.

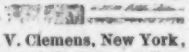
No. 461,305.—Erasive-Rubber Holder; Lothar W. Faber, Port Richmond, N. Y.

An erasive implement consisting of a thin flat-strip of erasive rubber protected on its two flat sides, and one end by the sheet-metal folded strip bowed at the rear, toothed at the ends to grasp the projecting end of the rubber, provided with rising inclines toward the forward end of one or both sides, and furnished with the sliding clamp-ring.



No. 461,258.—Bottle-Seal Stopper; Ernest V. Clemens, New York, N. Y., assignor to the De La Vergne Bottle and Seal Co., of New Jersey.

An elastic seal-stopper having as a component part of its body and integrant therewith a displacing plug or portion, whereby relief from the compressure may be afforded during the extraction of the stopper from a bottle.



No. 461,259.—Combined Bottle and Stopper; Ernest V. Clemens, New York, N. Y., assignor to the De La Vergne Bottle and Seal Co., of New Jersey.

The combination of a bottle having in the neck thereof a recess with an upwardly-converging peripheral wall and an elastic stopper having as a component part of its body and integrant therewith a displaceable plug or portion, whereby relief from the compressure may be afforded during extraction of the stopper from a bottle.

No. 461,272.—Electric Conductor; Frank A. Perret, Brooklyn, N. Y., assignor to the Elektron Manufacturing Co., same place.

An electrical conductor having a fibrous insulating covering and treated with a solution of natural gum in collodion.

No. 461,310.—Rubber Shoe; James A. Brittain, Leadville, Colo., assignor to himself, August P. Willy, and Meck H. Stacy, same place.

As an improved article of manufacture, a rubber shoe having the usual foot-opening, the upper edge of the shoe around the opening being unbroken, and a continuous or endless metal spring embedded within said upper edge.

No. 461,349.—Atomizer; Andrew Leslie, St. Louis, Mo., assignor to the A. M. Leslie Surgical Instrument Co., same place.

An atomizer comprising a glass shield provided with a neck having enlargements therein, and rubber stopper carrying the atomizing-tube and rubber bulb and formed with contracted and enlarged portions to fit the corresponding portions of said neck, into which it is inserted.

No. 461,407.—Hose-Strap; David T. Ellis, Bridgeport, Conn., assignor to Charles S. Knowles, Boston, Mass.

A hose-strap made of a single piece of wire bent or shaped before its application to a hose to have a cross-bar, parallel side-bars, and curved ends bent upon the same plane and upon a line with the cross-bar to form attaching-hooks prior to the application of the strap to the hose, and by means of which, in straining the strap to the hose, draft may be exerted instantaneously in the same direction upon each free end.

No. 461,415.—Lawn-Sprinkler; Thomas C. Bonnette, Bay City, Mich.

The combination of the nozzle for directing the flow of water, a sleeve passed over and projecting beyond the end of the nozzle, a vertical web arranged diametrically across the upper end of the sleeve for dividing the flow of water, and the distributing-wings pivotally mounted to revolve with the said web on a vertical axis above the sleeve and provided concave and upwardly-inclined under surfaces having their lower portions merging into the lateral surfaces of the web.

No. 461,467.—Composition of Matter for Insulating Purposes; Marcus O. Farrar and Charles C. Howe, Bristol, N. H.

A composition of matter to be used for insulating wires carrying an electric current or moulding the same into conduits for conveying said wires underground, consisting of silica, alumina, peroxide of iron, magnesia, lime, soda, potash, water, and asphaltum.

No. 461,579.—Process of Demagnetizing Asbestos; Henry W. Johns, New York, N. Y.

The mehanical process of demagnetizing asbestos, consisting in crushing or fibering the asbestos and then subjecting the mass while under agitation to the action of an air-blast and magnets.

No. 461,757.—Chalk-Line Holder and Plummet; Robert C. Hoxtable, Dartmouth, Nova Scotia.

A chalk-line holder and plummet comprising a flexible body having a slit in one side and openings at each end, an eyelet secured in one end and a perforated weight in the other end of the body, and a line extending longitudinally through the body and through the eyelet and weight.

No. 461,759.—Fender for Vessels; Jacobus T. C. Koch, Amsterdam, Holland.

A fender comprising an elastic cushion, a metalic casing therefor, an outer surrounding netting, and an elastic filling between the netting and casing.

No. 461,849.—Drip-Cup for Umbrellas; Howard A. Runkle, Reading, Pa.

A rubber drip-cup for umbrellas, comprising a globular cup having longitudinal ribs, a flaring top, a recessed extension closed at its lower end formed with longitudinal corrugations, said extension being adapted to receive and entirely enclose the ferrule of the umbrella.

No. 461,941.—Bottle-Stopper; John H. Luckey, New York, N. Y.

In a bottle-stopper, the combination, with the bottle having upon its neck an exterior annular enlargement with a flat upper face, and a rounded lower face, and above said enlargement an exterior ridge of less breadth than said enlargement and having a beveled upper and a flat lower face; of a rubber ring surrounding the neck and nominally extending from the face of the ridge slightly beyond the mouth of the bottle, the inner face of the ring having a groove closely fitting the ridge and the outer face thereof being rounded, and a stopper covering the mouth and bearing upon the upper end of the ring, the upper face of the stopper being rounded; all said rounded faces forming a globular mass around the mouth and neck when the bottle is closed.

No. 462,013.—Pneumatic Tire; Joseph Moseley and Benjamin Blundstone, Manchester, England.

In a pneumatic or air-cushioned tire, a screwed tube, passing into the interior thereof, a collar upon the lower portion of said screwed tube, a suitable non-return valve attached to the lower end of said tube, a nut upon the tube upon the exterior of the tire, a washer and a closed screw-cap fitting upon the upper end of the tube and acting to prevent the access of dirt to the screwed tube, and adapted to jam against the nut.

No. 462,057.—Composition for Steam-Pipe and Boiler Covering; Frank B. Mott, Providence, R. I.

A composition for coating heat-radiating surfaces, consisting of wool waste, asbestos, marl, graphite and powdered rice.

No. 462,129.—Felt Boot; Ryan Heaton, Howell's Depot, N. Y.

A felt boot, or analogous article made up of thin uncorded bat, a thicker accorded bat, and an interposed reticulated wool fabric, the parts being incorporated with each other, and a knitted bag incorporated exteriorly with the above, the parts being united by felting them together so that the fibres will be incorporated with each other.

No. 462,151.—Combined Rubber Tip and Tape Measure; Frank McIntyre, New York, N. Y., assignor to the Eagle Pencil Co., same place.

The tip, consisting of the rubber-holder, the pencil socket or holder, the strips extending between and connecting these parts, and the tape-reel interposed between the parts and pivoted in and supported by the strips.

Action of Metals and Acids on India-Rubber.

ONE of the best contributions to our knowledge of the action of various substances on India-rubber is to be found in a paper by Mr. W. Thomson, F.R.S.E., in the proceedings of the Manchester section of the Society of Chemical Industry for 1885. Since that date this subject has been placed under further study by Mr. Thomson in conjunction with Mr. F. Lewis, and in a recent paper read before the Manchester Literary and Philosophical Society the results of this investigation are summarized.

The method of examination was very simple. A fine sheet of India-rubber spread on paper was vulcanized by the cold process with a mixture of chloride of sulphur and carbon bisulphide, and then the action of various substances upon this rubber was examined, the sheet being separated from the paper, so that the stretching properties could be tested.

The action of various metals was tested by using them in the form of filings which were sprinkled upon the rubber. The whole was then kept at a temperature of 60° C. for ten days. Copper was found to have by far the most injurious action; platinum, palladium, and aluminum have only a very slight action, whilst such metals as cobalt, tin, magnesium, bismuth, cadmium, silver, chromium, nickel, arsenic, iron, antimony, gold and zinc have none at all.

In examining into the action of metallic salts and oxides, saturated solutions were made in water and painted upon small pieces of the rubber, or, in the case of insoluble substances, pastes were made with water and painted on, the whole being allowed to dry. The heating was subsequently carried out as before.

The following compounds entirely destroyed the rubber, viz., copper sulphate, copper chloride, copper nitrate, copper ferrocyanide, copper oxide, copper sulphide, silver nitrate, arsenic iodide, strontium chlorate, vanadium chloride, manganese oxide, bismuth, chloride. The following had an injurious effect, viz., ferrous nitrate, sodium nitrate, uranium nitrate, ammonium vanadate. The following had very little action, viz., lead chromate, ferrous sulphate, zinc acetate, zinc chloride, tin perchloride; whilst the behavior of about sixty salts having no action at all was examined.

Exceedingly small quantities of copper salts are injurious in rubber and tend to cause it to blacken and gradually decay. With regard to the action of acids, very dilute solutions of hydrochloric, sulphuric, chromic, citric, or tartaric are stated not to be prejudicial; but nitric acid rapidly attacks rubber. A solution of 10 per cent. of sulphuric acid completely destroys the properties of the rubber. Several of the oxidizing agents were found to be injurious, but chromic acid has only a slight action, and acid or alkaline solutions of hydrogen peroxide are practically without any effect.

An Important Rubber-Patents Suit.

THE suit of Isaac F. Williams and the National India-Rubber Co. of Bristol, R. I., vs. the Goodyear Metallic Rubber Shoe Co. of Naugatuck, Conn., has been assigned for argument before Judge Shipman in the United States District Court on November 24.

The suit is for infringement of patents granted Mr. Williams in 1872 and 1875. The patent covers what is known by the trade as a "snow excluder." It is shaped like an arctic, only as the shoe is opened it shows a folding vamp, which excludes water. The arctic will not do this. The patent of Mr. Williams covers this fold inside the shoe. The Naugatuck company have been making this shoe since 1877. They had the exclusive right to manufacture the old Wales Rubber Co.'s arctics, and they commenced as above to put this new invention of Mr. Williams's in their arctics, calling them by the same name, "snow excluders." The United States District Court of Boston, Judge Nelson presiding, has decided the validity of this patent in a suit against the Boston Rubber Co., and Judge Shipman, in the same court in Connecticut, has decided the validity of the patent in a suit against the Candee company of New Haven. The patent expires in 1893.

The suit will involve many thousand dollars, and as the validity of the patent has twice been established, the result of this trial will be looked for with much interest. The invention was a valuable one, insomuch as while the common arctic, with its fleece lining, was very comfortable in riding or travelling, it was not what was needed in a snow-storm or heavy rain to keep out the water. The invention of Mr. Williams, by adding this vamp, which, when the shoe was buckled, did not add to its clumsiness or very much increase its weight, was the perfection of the arctic shoe, and other companies saw its merits and its great advantage over the common arctic, and commenced its use.

This statement of the points in litigation is adapted from the Providence *Journal* of October 28.

Making the Store Attractive.

THE value of a luxurious apartment to invite intending purchasers into cannot, says the London *Boot and Shoe Journal* be fully estimated. Sufficient it is to say that the first impression is usually a lasting one; therefore, if it be a bad one, it proves that business could be altered if steps were taken to produce a good first impression. We are fully convinced that inferior boots can be and are daily sold in well-fitted establishments at a higher price than would be possible in a poverty-stricken looking shop in the same locality; and, moreover, we believe that a well-adorned shop has more effect in pacifying public opinions regarding the quality and style of goods than all the practical preaching possibly obtainable can do in a cold and cheerless establishment. The present season of the year is one when retailers can afford to spend a little time in beautifying their shops, and while they may not be able—all of them—to put the same amount of capital down in the shape of choice carpets, furniture and fixtures, there are very few stores which could not, without the means at hand, be easily and materially improved.

An Economical System of Steam-Heating.

SOME of the India-rubber manufacturers have begun the use of the Williames Vacuum System of Steam-Heating, which consists, briefly, in arrangement of apparatus for drawing the steam and condensation through the piping by suction, instead of forcing the circulation, as in previous practice, by pressure.

The apparatus required is simply an attachment whereby a partial vacuum is maintained in the piping, thus insuring perfect circulation throughout the heating coils. It was first introduced by Mr. Napoleon W. Williames, in the year 1880, at some of the largest manufacturing establishments in Philadelphia, and has been in constant use since that time.

Exhaust steam is utilized by it without any back pressure on the engine, so that the cost of both power and heat is no greater than the cost of power alone, and when applied to plants in which live steam only is available for heating at high

pressures, it is almost equally valuable. In several instances, an initial boiler pressure of 2½ pounds has been sufficient to insure better circulation and more efficient heating than had previously been obtained from the same piping under pressure of eighty pounds.

The system has, in every case, shown an actual saving in fuel; while its advantages, in many other respects, such as increased efficiency of engine and boiler capacity, immediate circulation, absence of noise and freezing in pipes, commend it to manufacturers and others.

Attention is invited to the fact that no very material change in existing piping is necessary, the oldest and most defective being rendered as efficient by suitable changes as the most modern and best constructed. It can be applied at small expense, without interruption to business, and in such manner that the existing method of heating can be restored immediately, if desired.

One firm using this system write that it has enabled them to utilize the exhaust steam of the pumps, ice and electric-light machines for the purpose of heating all of the buildings without the use of any live steam. Another firm write that the system has given entire satisfaction in maintaining a uniform temperature throughout the building in the coldest weather with exhaust steam, returning all the water to the boilers, practically making the cost of heating almost nothing.

The sole licensees for the sale of factory rights in the United States are the Warren Webster Co., No. 491 North Third Street, Philadelphia, who invite correspondence with a view to giving further information on this subject.

Cellulose to be Made in Philadelphia.

THE readers of THE INDIA RUBBER WORLD have been kept informed of the action of the United States Government in adopting cellulose as a lining for war-ships, the experience of the French government having shown that the use of this material renders ships practically unsinkable. A condition of the adoption of this material by our Navy Department is that it shall be manufactured in this country. Accordingly a company has been organized—the Franco-American Cellulose Co., of Philadelphia, of which the president is Alfred J. Ostheimer; the secretary and treasurer, W. J. Ostheimer, and the general manager Emanuel Cheneau. This company obtained the American control of the French patent. Four vessels are now being built for the government by the Cramps, and others by the Union Iron Works, of San Francisco. In these vessels, between the outer shell of iron and the inner shell of wood, a lining of cellulose, five feet wide and five feet deep, will be introduced. A large plant to manufacture cellulose is now being built in Philadelphia.

"Gutta-Percha Paper" in Ulcers of the Legs.

DR. VASILY P. KURTCHINSKY of Nejin (*Vratch*, No. 35, 1890) speaks highly of the so-called "gutta-percha paper" as the best means of rapidly curing even the most intractable ulcers of the leg. The diseased surface should be first carefully washed with a 4 per cent. boracic-acid solution, and then gently dried with a piece of absorbent-cotton wool, after which a sufficiently large sheet of the "gutta-percha paper" (previously washed in the solution and dried between towels) should be applied, covered with a thin layer of cotton-wool, and lightly fixed by means of a muslin roller. The dressing should be changed every day. Under such simple treatment the ulcers are said to heal soundly in about five days in more or less recent cases, while those of older standing and greater severity are cured in two or three weeks. Pain, heat, tension and disagreeable subjective sensations subside almost immediately after the first application. Similar excellent results are also obtained in all cutaneous affections which are characterized by an intense local irritation, such as dermatitis of various kinds, acute or chronic eczema, erythema, erosions or fissures. The author adds that the application of Martin's India-rubber adhesive plaster is followed by identical beneficial effects. This material, however, is a good deal more expensive than gutta-percha paper. In either case the curative action must be attributed mainly to the powerful sedative and protective properties of the dressing material.—*British Medical Journal.*

Some New Catalogues.

THE new catalogue of Mechanical Rubber Goods manufactured by the Home Rubber Co., Trenton, N. J., is of convenient size for ready reference, and contains 52 pages, besides the cover, with lists of belting, hose, packing, tubing, gaskets, springs, matting, valves and other rubber goods, together with hose-reels, hose-pipes, hose-couplings and other appliances for the use of rubber goods. Illustrations of many of these are given. The manufacturers invite the trade to write freely for samples.

Some hints to users of rubber belting are given in this catalogue, and cannot fail to be of value. For example:

"The belt about to be adjusted to the pulley should be cut shorter than the distance around the pulleys by ⅛ to ¼ of an inch for every foot, when measured with a tape or string.

"A belt six inches wide and 3-ply thick will stand a direct strain of 5000 pounds, and other sizes in proportion."

"If the belt should slip from dust or other causes—which seldom happens—it should be *lightly* moistened on the side next the pulley with boiled linseed oil."

"All animal oils or grease are injurious to rubber belts."

"The seam side of the belt should not be placed next to the pulley."

"The belts will be greatly improved and their durability increased by putting on with a painter's brush, and letting it dry, a composition made of equal parts of red lead, black lead, French yellow and litharge, mixed with boiled linseed oil and Japan enough to make it dry quickly. This will produce a finely-polished surface. A coat of the same composition may be applied should the rubber get peeled from the surface of the belt."

Attention is called to the fact that steam-hose, as ordinarily made, is vulcanized at a temperature of 200°. Therefore, whenever it is subjected to a continuous heat greater than 240°, the rubber is hardened and the hose deteriorates rapidly. A table is given of the heat generated by pressure, from which consumers will see the advantage of keeping the steam pressure below 40 pounds.

40	pounds	steam	pressure	generates	269°	heat.
50	"	"	"	"	283	"
60	"	"	"	"	295	"
70	"	"	"	"	306	"
80	"	"	"	"	315	"
90	"	"	"	"	324	"
100	"	"	"	"	332	"

* * *

THE Tyer Rubber Co., of Boston, issue a neat booklet with the fascinating title, "Worth Reading." When opened, the little book shows on first page a cut of the Tyrian hot-water bottle, with a few words to the effect that while our grandfathers used

heated soapstones and bricks to keep their feet warm, to-day people use rubber water-bags, and in that connection it says a good word for the Tyrian. The next two pages are devoted to a few words and an illustration of the original Fairbanks Fountain Syringe. The following pages show the Tyrian Continuous Spray Atomizer, the Eagle nursing bottle, the Tyrian Imperial Syringe, and the last page of the book has a word upon the trade-mark "Tyrian," and the goods manufactured under it.

* * *

THE Crescent Insulated Wire and Cable Co., of Trenton, N. J., send out a very neat catalogue of their seamless-rubber insulated wires and cables. The officers of this company are C. Edward Murray, president; Richard R. Whitehead, vice-president and treasurer; F. A. C. Perrine, consulting electrician. In a brief prefatory note the company tell of the style of goods they are producing, and give a most satisfactory guarantee of their excellence. Following this are tables of electric-light, telegraph and telephone wires, plain and braided; electric-light solid conductors, electric-light stranded conductors, overhead-line wire, underground electric-light cables, flexible electric-light cable, together with a careful and complete table of the weights of copper wire in one thousand foot lengths and mile lengths, reckoned at standard gauges.

* * *

MOST buyers of fine tools are familiar with the reputation for excellence in this field enjoyed by L. S. Starrett, of Athol, Mass. A new edition of his illustrated catalogue has been published under date of October 1, 1891.

Those Old-Fashioned Gum Shoes.

HE was as benevolent, kindly-appearing an old gentleman as ever lived, to all appearance, and his every word bore the impress of truth and good judgment. Hence the clubmen all agreed with him when he said, with a regretful sigh, yet without bitterness:

"What a pity it is that American manufacturers set their splendid abilities at work to make poor goods rather than better goods."

"Pity indeed," assented the banker.

"Take rubber shoes for instance."

"Certainly, the styles are better than they used to be," ventured the young man of the party.

Ponderously but kindly the old gentleman turned and looked at the foolish boy, saying:

"They *look* better than they used I grant, but that is one sad feature of the case. *I* don't buy rubber shoes for style. I don't care for looks. I want comfort, waterproof qualities, lasting qualities. When I was young we had pure rubber shoes. No shoddy, no varnish, no style, but we got our money's worth. I would willingly pay $5 a pair for such shoes to-day, but they cannot be secured."

"True, every word of it," echoed the lawyer.

"Would you wear such shoes if they could be secured," ventured the young man, timidly.

"Wear them! Get me a pair and see! Wear them! I would wear them for years, whereas I now buy a new pair every few months."

"I will wager a dinner at Delmonico's that you would not wear a pair of them ten hours on a stretch, and if you will take the bet, I will furnish the shoes."

"Done," cried the old gentleman, heartily, and the crowd witnessed the wager.

A rainy day came, and with it the young man, and, wonder of wonders, a pair of pure rubber shoes, just the size to fit the generous foot of his opponent, who put them on with a stamp of exultation.

Three hours after into the young man's office limped an individual who bore marks of former respectability, kindliness and good judgment, with wilted collar, flushed face, beaded brow; he sank into a chair and gasped:

"Release me from that bet!"

"What! ain't the shoes what you wanted? They are the old-fashioned kind. They are such as you wore when young. Observe the pure rubber. Quarter of an inch thick and the purest of pure Pará. No grasping manufacturer made them, for they were made in Brazil on a clay last. They will wear for years."

"Yes, but I won't. They are drawing the life out of me. My feet felt like red-hot hams. Release me or my blood will be upon your head."

"And the dinner?"

"The dinner goes my boy, for you and the rest, and an old fool who didn't know what he was talking about gives it."

Unnecessary Solicitude.

HE was evidently bent on suicide. He had waded into the edge of the water at Goat Island and stopped as if in deliberating whether he should make the final fatal plunge. Half a dozen tourists saw him and began to yell:

"Come out of that."

"You'll be drowned."

"Save him, some one."

"Don't let him."

"Police! Police!"

He paid no attention for a few minutes. Then he seemed to think better of his purpose and stepped carefully back to the shore.

"What were you going to do?" cried several.

"Gentlemen," he answered with dignity, "I was merely testing these newly-patented, never-wet-through goloshes of which I am the inventor and sole agent. It stands to reason, gentlemen, that goloshes which all the waters of Niagara could not wet through must be——" but the crowd had vanished.—*Buffalo (N. Y.) Express.*

Asbestos in Hungary.

A SYNDICATE has been formed recently in London for the purpose of purchasing a concession of about 300 acres of asbestos ground in the district of Ruderia, in Southern Hungary. It is expected that asbestos works will be established in the neighborhood of Cardiff Docks. A capital of about £70,000 has been subscribed for the purpose of working the undertaking. The syndicate includes Mr. W. Thomas, mining engineer, Aberdare; Mr. G. Griffiths, formerly a partner in Messrs. Thomas & Griffiths, Cardiff; and Captain Vowley, Cardiff. These gentlemen have recently returned from Hungary.

THE India-rubber snakes that are seen in so many rubber stores and which in some cases look exceedingly natural, were responsible for quite a scare in Pittsburgh recently. It seems a boy put a large one on the sidewalk in the early evening, and in response to the screams of ladies a policeman advanced and started to club the reptile. His club making little impression, he drew his revolver and shot at it several times, much to the delight of the youthful practical joker.

New Goods in the Market.

TO MANUFACTURERS AND PATENTEES:

It is our aim to embody in this department descriptions and illustrations of all the latest novelties introduced in the market, to the end that jobbers, retailers and buyers of rubber goods generally may look here for information as to everything new that each month or season brings forth. Manufacturers and patentees are, therefore, most cordially invited to co-operate with us in making the department as complete and attractive as possible—the distinct understanding being that no charge whatsoever, either direct or indirect, will be made for these publications. Our reward will come through giving our readers valuable information; and that will be reward enough if manufacturers but give the information freely and in all cases at the earliest practicable moment.

In forwarding descriptions of new goods, be careful to write on one side of the paper only; be brief, but always write enough to give the buyer a clear idea of the article you offer; give your full address, plainly written; and in all cases send a small illustration or wood cut if you have one.

A NEW and improved Double Hose Band and Adjuster, patented last year, is represented in a series of illustrations herewith, the patentee and manufacturer being William Yerdon, Fort Plain, N. Y. To illustrate its features properly a cut of an old-style coupler is shown [Fig. 1] in which the arrow indicates a weak point where a tendency to leak is apt to be developed.

FIG. 1.

In Fig. 2 is shown the Yerdon band, ready to attach to the hose. Instead of one solid band, the Yerdon design is double, for which reason it is claimed that the hose may be pressed more closely to the coupling than in the case of older styles. A special feature, however is a tongue, shown at *X*, the office of which is to preserve the circular form of the hose and thus prevent the tendency to leak pointed out in Fig. 1. In the second cut the band appears ready to be attached to the hose. In Fig. 3 the Yerdon band is shown with the nut locked, by a method making it very secure. Fig. 4 shows the method of attaching the band to a hose coupling. The patentee says: "The band being double, enables us to force the hose to fit the corrugated surface of the coupling more closely than it is possible to do with any of the other patterns. Again, having but one tongue, we are able to make it heavy and its wedge shape makes it as it enters the slot or groove press the hose tightly to the coupling, thus forming a complete band with a uniform pressure at all points and making a leak impossible." In Fig. 5 is illustrated the Adjuster *X* used in applying the Yerdon band to a hose coupling, the ends of the Adjuster, when used in a vise, fitting into the shoulders *Y Y* in the band. Any ordinary vise, if of sufficient size, may be used, and the band may thus be drawn tightly with comparatively little effort. These bands are made in a great variety of sizes, for heavy steam, suction, air-brake and brewers' hose. No wrench is needed for adjusting the band, but only a screw-driver. The price per dozen bands ranges from $1.50 for ⅜ inch 3-ply hose, upwards. Adjusters cost 25 cents each and upward. Aluminum is used as an element in the manufacture of the Yerdon bands to render them non-corrosive. Some of the leading rubber companies have indorsed this invention. It may be added that circulars containing their indorsements and those of other important firms which have used this invention will be supplied to all who write to the manufacturers asking for them.

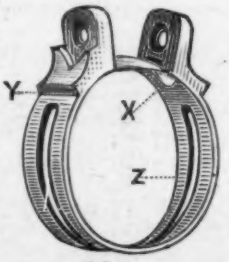


FIG. 2.

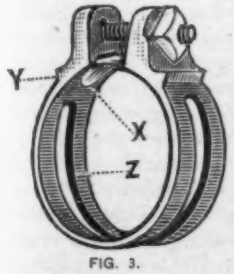


FIG. 3.

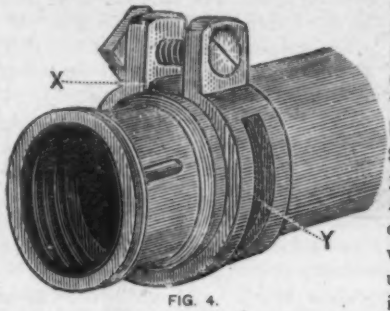


FIG. 4.

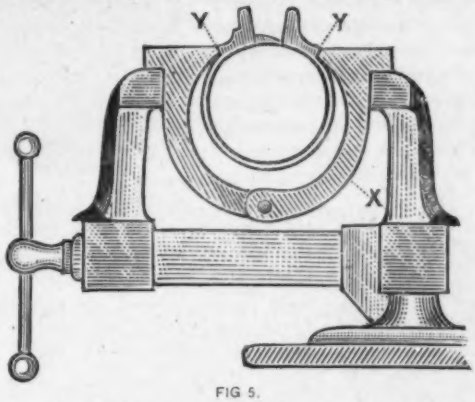


FIG 5.

An Improved Hot-Water Bag.

IT is very pleasantly said in a recent very neat little brochure, "Worth Reading," that while our grandfathers used heated soapstones and bricks to keep their feet warm, we, of a wiser generation use hot-water bags. Indeed it is a number of years since the first hot-water bottles were put upon the market, and so much thought has been bestowed upon them that it would scarcely seem possible to add any new feature having any value. At the same time the bag shown in the accompanying illustration, the "Tyrian Imperial," has new features that are well worth consideration. The first improvement is in the neck of the bottle, which is so made that when hot water is poured through the flaring top, all of it goes into the inside of the bottle, nor do a few hot drops remain outside to burn the fingers of the holder. Another improvement of value is in the metal screw-stopper which is so constructed that it drops into place, and always catches the right thread, and is made tight with a few simple turns. Those who have struggled with screw-stoppers that wouldn't start right, and that ran in a bit crooked and upset the thread, will appreciate the advantage of this new feature. Made by the Tyer Rubber Co., Andover, Mass.

Rubber-Covered Carriage Steps.

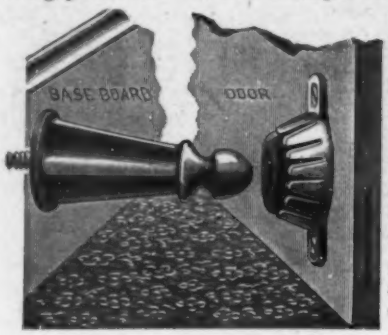
THE advantage of a rubber-covered stair or step is so plain that it is hardly worth dwelling upon. The fact, however, that so many of the old-fashioned iron carriage steps are still in use, and that scores of accidents happen from them, is a good excuse for the insertion of cuts of the latest style of rubber carriage-steps, and a word upon their excellencies. To begin with, the step is made of the very best malleable iron, and the rubber moulded upon it, in such a way that it flows through a series of recesses and is held in position so firmly that it cannot be easily removed. This gives a soft and elastic treading surface, and a perfectly secure foothold under all circumstances. Already these goods have been adopted, not only by the leading carriage-builders in the United States, but in England, France and Germany, where they are patented. A great number of shapes are made, and a large amount of care and taste has been exercised in the designing of beautiful patterns for these steps. Of the shapes shown in the cuts, the square step with the horse-shoe on it, is used for buggies and beach wagons, the round step is for goddards and phaetons, and the half round is for broughams, herdics and cabs. Manufactured by the Rubber-Step Manufacturing Co., No. 43 Haverhill Street, Boston, Mass.

The Dove Automatic Inkstand.

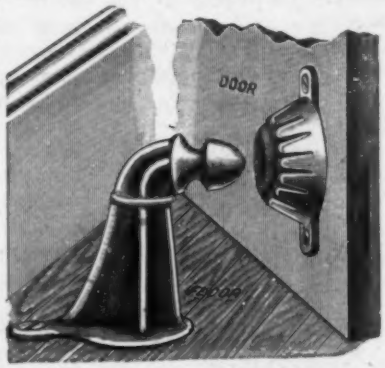
THIS inkstand consists of several simple parts. The engraving represents the device two-thirds size. The bottom is of glass, fluted, as shown, which adds an ornamental appearance. The hard-rubber part at the top attaches to the glass by a screw thread. There is used a rubber packing for making an air-tight connection. The ink stem extends downwardly into the fluid about an inch. Connecting at the top with the dip-cup is a rubber diaphragm which allows for expansion and constitutes the compression piece for forcing the ink up into the dip-cut. The action of the inkstand is somewhat similar to other types with which our readers are already acquainted, although it has points peculiarly its own. The device is claimed to be the most convenient of inkstands, because it is always ready for use. There is no cover to be opened and closed and the inkstand requires filling and cleaning only at long intervals. It automatically inks the pen to the proper height, and prevents taking up surplus ink which must otherwise be scraped or thrown off to prevent blotting. It insures clean fingers. It never puts dust or lint on the pen, and inasmuch as the ink is forced from the centre of the well, the writer is never bothered with scum from the top or sediment from the bottom. Special attention is called to the economical feature in its use, it being asserted that 75 per cent. of the ink as commonly used is saved by employing it. It is made by the Goodrich Hard-Rubber Co. and marketed by the Dove Inkstand Co., of Akron, Ohio.

A Rubber Attachment for Doors.

THE accompanying cuts illustrate the Eureka Combined Door-Stop and Hold-Back, made by Kinsley & Frisbie, Bridgeport, Conn. This is a simple and effective device for the purpose for which it is designed—to prevent the slamming of doors and marring of walls. The knob is screwed into the base-board or floor, and the rosette, which holds the cone-shaped rubber bumper and hold-back, is attached to the door with two screws. In swinging back the door the rubber acts as a bumper in striking the knob. By a slight pressure against the door the acorn top of the knob is forced into the rubber ring, and the door is securely held back until released by a gentle pull of the door. It is readily attached to the top or bottom of the door, without cutting or defacing the woodwork. It is made in finished brass, nickel plated, and japanned in colors. The simplicity, cheapness, durability and ornamental appearance of this article are referred to by the manufacturers. Price list:



EUREKA DOOR-STOP—WALL ATTACHMENT.



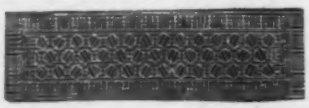
EUREKA DOOR-STOP—FLOOR ATTACHMENT.

		Per dozen.
No. 100.	Wall attachment, Iron finish in Berlin bronze,	$2.00
" 102.	" " " " " Maroon japan,	2.00
" 104.	" " " " " Black "	2.00
" 106.	" " Nickel plated,	3.50
" 108.	" " Finished Brass, lacquered,	5.00
" 200.	Floor attadhment, Iron finished in Berlin bronze,	2.25
" 202.	" " " " " Maroon japan,	2.25
" 204.	" " " " " Black, "	2.25
" 206.	" " Nickel plated,	3.75
" 208.	" " Finished Brass, lacquered,	5.50

Discount to the trade. Manufactured by Kinsley & Frisbie, Bridgeport, Conn. General agents: John H. Graham & Co., No. 113 Chambers Street, New York.

A New Style of Stair-Tread.

THE engraving herewith represents a new pattern of a corrugated stair-tread now manufactured by the India-Rubber Glove Co. It does not have the severe style usually presented in old patterns and is therefore more pleasing to the eye. There are 21 sizes of these goods made, the smallest six by eighteen inches, and the largest eight by thirty-six. There are also two thicknesses made, one-eighth of an inch and three thirty-seconds. Prices range from $3.30 to $10 per dozen. The use of rubber stair-treads is becoming so large that almost every manufacturer of rubber goods now devotes much attention to the trade in them.



The Cleveland Hose Handle.

A GOOD advertising device is a large colored picture, representing a man's hand bruised at every joint, to say nothing of scars between the joints, with strips of court-plaster here and there, and a "rag" on the thumb and a finger, the whole being supposed to show the result of attempting to attach a lawn-hose without good appliances. This picture has been sent out by Fuller Brothers, Cleveland, Ohio, to draw attention to the Cleveland Hose Handle, which they manufacture and of which a small cut is given on this page. The advantages claimed for it are that it can be attached to any garden-hose; it permits hose to be attached to the hydrant firmly and quickly, and will prevent breaking of the hose at coupling. The wire wound about the hose above the "handle" is also recommended as affording additional protection to the hose. Patents have been applied for. The price is 25 cents, with discounts to the trade.

A New Sporting-Jacket.

THE accompanying cut illustrates a new sporting garment manufactured by the India-Rubber Glove Co., of New York. It is complete and convenient in many ways. In addition to the number of pockets seen from the outside is an under one which extends the entire width of the coat, and has a capacity far exceeding that of the ordinary game-bag. This large inner pocket is reached from both the right and the left sides of the coat on the inside. There are also two pockets on the back of the coat, not shown in the cut. No detail is wanting in these coats; even the color is made to harmonize with that of dead grass, which, with wading-pants of the same tint, forms a complete deception to game. These coats weigh between 2½ and 3 pounds, and are sold for $10 for the most expensive forms.

Value and Importance of Trade-Marks.

IN these days of bitter trade competition and price cutting the value of patents and trade-marks is much more appreciated and sought after than heretofore. In many cases a trade-mark is the foundation of great enterprise and the principal grounds for success. A trade-mark is any arbitrary word, sign or symbol applied to goods placed for sale on the market. The adoption of a trade-mark and the application of the same to the goods immediately creates a common law right therein, which the proprietor may and does hold exclusive to all others. The principal requirement to constitute a right in a trade-mark is that the word, sign or symbol shall be applied to goods placed on the market. One cannot appropriate a trade-mark by simply publishing the fact that he or they contemplate the use thereof.

They should place the mark on the goods, or otherwise no right arises. Trade-marks are allowed to be registered in the United States Patent Office upon the payment of the government fee of $25 and filing certain fac-similes and an application. They are registered for thirty years, with the privilege of a renewal for like periods upon the payment of the fee required.

It will be seen that a trade-mark protection is practically unlimited as to time. There have been more than 30,000 trade-marks registered in the Patent Office and the number of yearly registrations is continually increasing, which illustrates the fact that the community is becoming more convinced that trade-mark protection is of great importance and very beneficial to the proprietors.—*Hardware and Metal Review.*

No End to Rubber Specialties.

QUITE a business is done in finger caps with the hospitals. They are made of fine Pará, well shaped, and also very elastic. They can be so stretched as to go over the stump of a limb, but as a rule a special size is obtained for that purpose. They are chiefly used for sore fingers and thumbs, also by oyster shuckers, and the retailer makes a very fair profit by selling them at five cents each. There is also a growing demand for rubber basin plugs. A plug made of metal always lacks that close fit which is given to rubber, and the loss of liquid in the basin or bath, however minute it may be, is constant. Then in course of time the metal plug gets worn, while the rubber is only losing a surface that allows it to sink deeper into the waste vent. Plumbers and architects are now calling for rubber instead of metal as soon as their attention is turned to the advantage of the former.

It May Raise the Price of Gutta-Percha.

GUTTA-PERCHA will probably move upward in price. A new cable 1200 miles long, between Bermuda and the United West Indies, is projected under the auspices of the Canadian Pacific Railroad Co. The company, it is reported, have secured the proprietorship of the cable between Halifax and Bermuda, and they intimate that a large reduction will be made in tolls between Canada and the West Indies, as well as between Europe and the United States. As the Western Union Telegraph Co. have the distribution of messages coming over the cable from Halifax, and also at Jacksonville, Fla., it is not exactly clear how this sweeping reduction is to come about. A new route, however, will have been opened between London and Pará with a smaller number of relays than by the Lisbon way.

Price-Lists of Rubber Shoes.

THE selling-agent of a rubber company says in answer to the idea sometimes expressed that rubber should be quoted the same as leather boots and shoes are, in the "*Boots and Shoes Weekly:*" "The rubber industry is quite different from that of manufacturing boots and shoes. For example: Take any popular line of shoes and the manufacturer thereof seldom changes the price. He may change the last, style, pattern and quality of the shoe, but the price remains the same. Take a shoe that is sold at $2.25 a pair. Each season the manufacturer makes more or less changes in the style and make-up of this particular shoe, but he still has the shoe to sell at $2.25. The question of advance or decline in price of leather does not enter into his calculations. On the other hand, with the rubber manufacturer the market is subject to serious fluctuations in price of raw material. Each season we regulate prices according to the price of raw material, and, having made up a catalogue for the season or year, we have only to change the rate of discount to meet the fluctuation of the market."

ENGLISH newspapers announce that Villiers-Stuart is about to bring out a volume of personal adventures in the forests of the Amazon.

Trade Notes.

AT the annual meeting of the stockholders of the Elastic Rubber Co., of Boston, Mass., on November 4, T. Harvey Ellis resigned as president and director, and George C. Ingraham resigned as clerk and director. In their places George G. Bryant was elected president and director, and William J. Cable, clerk and director. J. Francis Hayward was re-elected as treasurer and director.

—The price of ivory and pearl is rapidly advancing on account of their extensive use in cutlery. This is specially noted abroad, and the tendency towards the use of hard rubber and celluloid is becoming more pronounced. Some Connecticut cutlery-makers have used hard rubber for a long time, and for the nicer grades celluloid, claiming for the latter material, a more lasting beauty. Of course nothing can replace pearl in beauty, or in its capacity for hard usage.

—An exceedingly neat six-inch rule, made of clouded white celluloid, is presented to the friends of the Gutta-Percha and Rubber Manufacturing Co., when they happen into any of the company's stores. It makes a very practical advertisement for the company.

—The New Brunswick Rubber Co. are extending their manufacturing capacity as fast as practicable, and report busy times. Charles J. Osborn, the general agent of the company, on his recent trip to Boston, had, as the chief object of his mission the securing of a large line of lasts made necessary by the increased demands upon the company.

—The Rubber Reclaiming Co. expect to complete the new mill at Birmingham, Conn., to take the place of the one lately destroyed by fire, so that it can be ready for occupancy by January 1. The contractor is already at work upon it. A full description of the new structure was given in THE INDIA-RUBBER WORLD of October. The company have all their mills in fulltide of operation and the completion of the new one is awaited with the expectation that it will afford relief in meeting the demands for the products of the company.

—The *Detroit* is at last launched, and is protected by a cellulose belt. Rubber-men are beginning to inquire why a rubber armor—woodite, for example—cannot be tried on some ships of the new navy.

—The Cable Rubber Co., of Boston, Mass., started up their mill on November 1, after extensive repairs. The company have a new treasurer, but one who is well known to the rubber trade, Mr. J. Francis Hayward.

—The Boston Woven Hose Co. are to remove from their present Boston store on January 1 to more commodious quarters, facing Winthrop Square.

—R. E. J. C. Teale has been appointed agent for the New Jersey Car Spring and Rubber Co. for Long Island, with an office at No. 100 Orange Street, Brooklyn. Mr. Teale was formerly of the firm of Teale & Morrow. He has been in the rubber business twenty-seven years, and in that time has naturally formed a very wide acquaintance.

—F. Wayland Brown, of the Huron Rubber Co., Cleveland, Ohio, was in New York last month. Mr. Brown reports the business of druggists' sundries in excellent condition in the West.

—The latest of the unique advertising devices in the production of which the B. F. Goodrich Co., of the Akron (Ohio) Rubber Works are so successful, is in the shape of a railroad "folder." It is handsomely gotten-up in colors, labeled on the outside "The B. F. G. Co. Railroad Time-table, New York, Akron and Chicago, R. P. Marvin, Jr., General Passenger Agent, Akron, Ohio." Inside the goods of this company are attractively referred to.

—The Atlas Rubber Co. received last month a good order for "projectors" from Germany. The German manufacturer in this case was good enough to state that he was a reader of THE INDIA RUBBER WORLD. The same company received one day last week a score of orders from cities in Ohio. Mr. Herbert has concluded his long and successful trip and has returned home.

—The R. D. Swisher Manufacturing Co., of Springfield, Ohio, makers of rubber-stamps, though not yet a year old, are reported to have built up a large business, giving employment to three travelling men.

—The report in a Boston newspaper of a suit by the Town of Uxbridge, Mass., against Joseph Banigan, president of the Woonsocket Rubber Co., for $2000 damages to a road caused by overflow from a dam at Millville, has been denied. Mr. Banigan, it is stated, says that the rubber company have no control of the dam.

—The Goodyear Rubber Co.'s new headquarters at St. Paul, Minn., James Suydam, manager, are at Nos. 98-102 East Seventh Street. The establishment is described by the *Pioneer Press* as the largest rubber store west of New York "worthy, in size and appointments, of the large wholesale and retail business done and stock carried" in St. Paul.

—Contrary to the general idea the inhabitant of the far West is taking the best quality of mackintoshes. In Washington, Dakota, and the extreme Northwest there is much exposure among military men, surveyors and engineers, and a good coat is found necessary. The East is asking for a cheaper coat now.

—Mrs. President Harrison gave an order a few days ago to the Hodgman Rubber Co. for a mackintosh. It was made specially for her and the company have since received a letter from Mrs. Harrison expressing her gratification at the fit, and the finish of the garment. Mrs. Morton, the wife of the Vice-President, had previously provided herself with one of these garments from the same company.

—The Magnolia Anti-Friction Metal Co., of New York, report that they made greater sales and did more business in the month of September this year than during the first eighteen months of their existence, commencing several years ago. The company have gained a great reputation for their peculiar metal, and in their dealings with the various governments have found it necessary from time to time to establish offices in London, Berlin, Marseilles, St. Petersburg and Vienna.

—The India-Rubber Glove Co. have on exhibition in their windows on Broadway, New York, a full set of the tools used by the native rubber-gatherers in the Brazilian forests. They are well worn, evidently having seen hard usage. Among them are the crock, gourd, machete, paddle and some nuts, all appropriately labeled. The Brazilian who sent up the articles forwarded a piece of his own handiwork in the shape of a rubber alligator, fashioned by the smoke of the nuts in the forest and quite creditable in shape when the rude implements with which it was wrought are considered.

—The Hodgman Rubber Co. are bringing out a new cloth for their mackintoshes, approaching more closely in appearance the textile substances used in every-day garments. It has a napped surface and is woven in small plaids. There is a tendency among well-dressed men to discard the heavy winter overcoat, a light overcoat and a mackintosh answering every purpose. Mackintoshes now are well ventilated, handsomely lined in silk and make a good appearance even when rain is not falling.

—The India-Rubber Glove Co. report an excellent business from all sections, the long-continued drouth having made little impression on the volume of their transactions.

—Mrs. C. K. Farrington, Everett, Mass., writing to THE INDIA RUBBER WORLD regarding the notice published last month of the rubber exhibits in the American Institute fair, New York, mentions her "Obelisk" abdominal spinal supporters as an exhibit which we failed to notice. This article has been illustrated in our pages.

—The works of the Massachusetts Rubber Co., at Reading, have been shut down for several weeks, while extensive repairs have been made on their engine.

—The latest banner of the Woonsocket Rubber Co.—"The Whistling Bootblack"—described in the last INDIA RUBBER WORLD, is on exhibition in a store window in London, where it is said to attract much attention.

—Mr. George H. Meeker, manager of the New York Insulated Wire Co., Nos. 78-80 and 82 Franklin Street, Chicago, has received the first of the shipment of three car-loads of Grimshaw white-core and B. D. wires from their factory at Wallingford, Conn. This shipment embraces 1,000,000 feet of their celebrated trade Nos. 228 and 227, No. 14 B. & S. wire, or more than enough to reach in a straight line from Chicago to Davenport, Ia., and the total shipment, if strung on poles, would nearly reach across the United States. The company have met with great success since the opening of their Chicago store. Their vulca electrical-wire ducts are about to be installed in the new Masonic Hall at Utica, N. Y., and are being extensively used in the West.

—The Colchester (Conn.) Rubber Co., in addition to beautifying the grounds surrounding their establishment, have shown their public spirit by equipping a complete weather-signal outfit for the benefit of the town. There are flags for day use and lanterns for night, displayed from a 100-foot pole, and daily blasts from the factory whistle.

—The pay-roll of the National India-Rubber Co., at Bristol, R. I., has been about $10,000 a week lately.

—One of the features of the new factory building of the Tyer Rubber Co. will be a large glass-covered monitor running the entire length of the factory. This will be used in the sunning of the finished goods, as a few hours exposure to sunlight gives many articles in the line of druggists' sundries an excellent finish.

—Charles E. Gibbs, well-known as a rubber-mould maker, was a sufferer by a recent Boston fire. He has, however, opened a shop at No. 6 Beverly Street, Boston, and is attending to his work as usual.

—The Home Rubber Co., of Trenton, N. J., have just added several presses for mould-work, made by John Thropp, of that city. They have also added two tubing-machines and two extra hose-vulcanizers.

—The paper engine, which is nothing less than a huge tub with a stirring apparatus, is again coming into use in rubber mills. It is used for cleansing the poorer grades of rubber from sand and bark, and for washing out the acid and alkaline qualities that many of these gums possess.

—The Eastern Electric Cable Co., of Boston, Mass., are now occupying new and elegant offices at their Roxbury plant.

—It seems that no damage was done by the fire in the works of the India-Rubber Comb Co., at College Point, L. I., on October 15, of which some accounts have been published. A small blaze in one of the buildings was instantly stopped by the automatic fire-extinguishers and the use of fire-buckets by the employés.

—Bailey's Heel Cushions are reported to be meeting with a phenomenal sale. A large number of the shoe stores are handling them, while the daily mail orders for them are exceedingly large.

—The Clifton Rubber Manufacturing Co., have added to their plant at Clarendon Hills, Mass., until now they possess a very complete and well-fitted factory.

—Jonathan Steward, the wholesale grocer of Trenton, N. J., who was ruined by the Star Rubber Co.'s and the accompanying failures, has made an assignment for the benefit of his creditors to George R. Whittaker, of Trenton. The liabilities foot up $329,000 and the assets $185,000. The liabilities include numerous indorsements for the Trenton China and Star Rubber companies. For two months Mr. Steward had been trying to get an extension of time, and had a deed prepared which would allow him two years' time. This deed was signed by twenty-two out of his twenty-six creditors. Their claims amounted to $273,000. The four who would not accept the deed held claims for $35,000. Only one stoutly refused, and that was the First National Bank of South Amboy, which held paper to the amount of $2500. To save the other creditors Mr. Steward made the assignment.

—The Chicago Rubber Co. have applied for a receiver for the Clapp Fire Extinguisher Co.'s property. Proceedings were based on a judgment for $30,025.75, said to have been recovered against the company in May, 1890.

—Among travelling men it is a common remark that Singer & Wheeler, Peoria, Ills., have the finest "druggists' sundries" store in the country. It is 40 by 175 feet, with shelves 2½ feet deep, which, as can be readily imagined, conceal a great quantity of stock.

—The Boston Belting Co., since October 1, have run their factory four hours overtime each day in endeavoring to keep up with the demands made upon them.

—Eugene Herbert, of the Atlas Rubber Co., has returned from a three-months' trip in the Northwest and the Southwest. Mr. Herbert, whose personal appearance and gain of flesh is positive proof that the trip has been a pleasant one, says that the Northwest is in a highly prosperous condition. In St. Paul, Minneapolis, Sioux City and Omaha, the orders were of the most liberal dimensions. The country between Atlanta and New Orleans seemed to be in poor shape; his maiden trip to Texas was a revelation. Orders were for full lots of the best goods. Trans-Mississippi sections are having a great year of it.

—In a contest as to who is the most popular salesman in "druggists' sundries," Bradford Doty, of the Atlas Rubber Co., is making a record very wearisome to some of the shining lights of the profession.

—J. Edwin Davis, treasurer of the Boston Woven Hose Co., is away on a brief business visit to their agency in San Francisco, Cal.

—The rubber-store proprietors of Boston are agitating the matter of closing at 2 o'clock Saturdays the year round. Some of them have already begun to do this, and without doubt others will fall into line shortly.

—The Reading Rubber Manufacturing Co. have opened a branch factory in Boston for the making up of fine mackintosh garments. They will employ from fifty to one hundred workers there.

—The Cameron Silica Co., of Providence, R. I., have added an Osgood dredge to their plant in Maine, and are taking out fossil-flour by the car-load.

—A large manufacturer of rubber shoddy has recently added to his plant three of the Magnetic Separators manufactured by Ezra Sawyer, of Worcester, Mass.

—Mr. J. W. Godfrey of the New York Insulated Wire Co., is taking a trip to the Pacific coast on the business of his house.

—The Newell Brothers Manufacturing Co., New York, report an increasing sale of rubber buttons, the latest design being called the "Pimlico," which has a sunken centre and rim with four holes, perfectly plain otherwise and highly polished. Mackintosh manufacturers are using a button made of vegetable ivory also styled "Pimlico" in brown mottlings, light colors and plain black.

—Sulphur rules high yet, the market having been in a cornered state in Sicily. Mine-owners and speculators there have made much money and are in a position to be very firm in their views. The imports into the United States are about 40 per cent. of what they were last year. The sulphur mine near King's Mountain, in North Carolina, which was made available during the Civil War, and afterward abandoned, is now receiving the attention of capitalists.

—Rubber-men are looking with great hope toward the Northwest for a good trade this winter and next spring. The wheat crop is immense there, and it has on account of its weight and quantity been gathered economically, and the profits even on small farms have been enough to provide many luxuries, and on the mammoth farms a small fortune has been made in many instances. Already good-sized orders are coming from the section facetiously termed the "banana region" by the mistaken followers in finance of Jay Cooke a quarter of a century ago, and that the people are flush is known by their invariably calling for the very best.

—Mr. Charles A. Clark, formerly manager of the firm of B. S. Hale & Sons, wire manufacturers at Malden, previous to its absorption by the Thomson-Houston Co., has accepted a position with the Electrical Specialty Co., of Pawtucket, R. I., selling their well-known specialties.

—The catalogue of the Hodgman Rubber Co., lately published, is tastefully gotten up and full of instruction to the retailer. It is in duodecimo form, has 158 pages, and is profusely illustrated. The letter-press is excellent, and the red-line border on each page is also in good taste. Full descriptions of the innumerable number of articles sold by this house, with a complete list of prices, are by no means the least important feature of the catalogue.

—A recent careful experiment with ruberoid demonstrates the fact that it is a most excellent material for manufacturing valves either with or without rubber. Ruberine has also been most successfully used in coating canvas for mechanical uses which, considering its low cost and lasting qualities, will open for it a wide field of usefulness. Both articles are manufactured by the Standard Paint Co., No. 2 Liberty Street, New York.

SOMEWHAT PERSONAL.

W. B. COVELL, who travelled for the Chelsea Wire Fabric Rubber Co., recently met with a painful accident. He was on his way from Boston to his home in West Newton, when the car in which he was riding was derailed, and he was badly hurt by the shock. It is feared that he will be confined to his bed for some weeks.

—Margaret Shaw Ingersoll, the apostle of dress-reform, advocates a boot for every-day use that has a thin sheet of rubber between the soles, held in place by rubber-cement. It is said she pays $25 a pair for these boots.

—Albion Chipman, proprietor of the Gould Packing Co., in Cambridge, Mass., is a member of one of those pioneer associations made up of the California gold-seekers in '49, one of whom he was.

—A. H. Lyman, manager of the Western Rubber and Belting Co., has developed a very fine baritone voice and is a member of one of the best male quartettes in Chicago.

—A. W. Swan, the expert bicyclist, in his recent ride from New York to San Francisco, covered a distance of 3264 miles and wore out two sets of bicycle tires.

—Various reports have been published in regard to the whereabouts of Thomas A. Bell. There is reason to believe, however, that he is now in South Dakota.

—Mr. Folger, the energetic treasurer of the Lockwood Manufacturing Co., of East Boston, is a noted yachtsman, and often takes his summer outing in that fascinating sport. He is so well up in that business, that his large shops are many times devoted to the repairing of machinery in some of the finest yachts in the country.

—Mr. H. H. Eustis, of the Eastern Electric Cable Co., has returned from the street-car convention at Pittsburgh, looking as jolly and energetic as ever, and apparently well pleased with the exercises as he saw them.

—Mr. Wheeler Cable, President of the Cable Rubber Co., of Boston, is one of the few fortunate fishermen who have been able to secure a three-pound pickerel from the Charles River.

—Mr. George Pierce, Superintendent of the Ætna Rubber Co., has the reputation of being the crack billiard-player of the Jamaica Club, which is a popular Boston association.

—The Boston Independent Cadets celebrated their one hundred and fiftieth anniversary on October 19, by laying the corner-stone of a new Armory building. They turned out with very full ranks and escorted a large number of past members who appeared in citizen's dress. Among the rest was Mr. George H. Quincy of the Candee Rubber Co.

—Few of the friends of George B. McLellan, until recently the New York manager of the American Rubber Co., were prepared for the announcement of his marriage to Pauline Hall, the famous operatic star. That he had a predilection for theatrical matters was assumed and that he had relinquished his position to become her manager was known, but the announcement of his marriage carried an elevation of eyebrows on Reade street.

—Mr. Arthur Meyer, of Charles Lowenthal & Co., has returned from Europe, bringing a bride.

New Sewing Machine for Rubber Goods.

THE new Two Needle-Two Shuttle machine now made by the Singer Manufacturing Co. is intended, among other things, to fill a long-felt want among waterproof-clothing manufacturers. The Singer Co. have made a two-needle machine for some time, but it had only one shuttle, leaving a zigzag stitch on the wrong side of the goods. But the new machine has two shuttles, making two separate and distinct rows of stitching, alike on both sides and having the advantage of always being perfectly parallel. It is fitted with a foot for making a double flat fell. So that pieces of waterproof with raw edges can be put into the machine and come out with a newly-lain flat fell on either side with double row of stitching, as true as a die. Members of the trade are now using this machine with extremely satisfactory results. It can be seen in operation at the Singer Show Rooms, No. 385 Broadway, New York, or at any Singer office.

A CHICAGO syndicate has been endeavoring to obtain control of the undeveloped asbestos fields in Central Wyoming, and options have been sold to agents which are good until next spring. Experts agree that the deposits are rich, but it is dangerous to be a "bear" on a mining property west of the Missouri River and remain in the vicinity.

THE subscription price of this paper is $3 a year.

Review of the Rubber Market.

THE market during the past thirty days has been active and comparatively steady, the fluctuations being narrow in range—63 to 66 for fine Pará and 47 to 50 for coarse. A large importer has disposed of considerable of his rubber but the holder considered nearest to Vianna has not sold a pound and will not name a price. Although this is a part of the famous deal of the Baron de Gondoriz it most likely has no significance in that direction, the individual belief being that in the whirligig of time prices will come around to a point at which a substantial profit can be made. This rubber is getting into excellent condition and on its merits it will sell at a handsome premium one of these days. During the past two or three days the market has assumed a firm tone in consequence of reported Brazilian troubles. Public cables from London are replete with disquieting rumors, which are made more perplexing by the fact that there is neither confirmation or denial from Pará, which, according to some reports, has seceded from the Republic of Brazil. In the present state of affairs a marked advance in rubber is regarded as among the probabilities, and it is on this point that the speculative feature hinges.

It is proper to say that private cables which come along regularly ignore the supposed political revolution, but this does not altogether relieve apprehension, for it is well known that there is a government censor of the telegraph at Rio, who would promptly suppress any information of this character.

The price of exchange is about as low as it ever has been, 13½d., or one penny above the minimum. Cables vary as to prices, 3650 @ 3700 milreis being named for islands and 2850 for coarse. The receipts at Pará, so far, this month are of an average character, approximating about 700 tons, and the estimate for the month is 1900 tons. Stocks in first hands November 11 were only 70 tons.

The arrivals at New York for the past thirty days are:

		Fine.	Caucho.
October	16.—By the *Finance*,	206,300 pounds.	10,700 pounds.
"	26.—By the *Ambrose*,	830,000 pounds.	49,000 pounds.
"	29.—By the *Seguransa*,	470,000 pounds.	9000 pounds.
November	9.—By the *Maranhense*,	526,000 pounds.	26,000 pounds.
"	12.—By the *Aliança*,	492,800 pounds.	.....
	Total	2,525,100 pounds.	94,700 pounds.

On passage there is the *Clement* with 260 tons.

The visible supply of Pará rubber on November 1 and also on October 1 was estimated as follows:

	November 1, 1891.	October 1, 1891.
United States	617 tons.	740 tons.
England	550 tons.	676 tons.
Pará	210 tons.	765 tons.
Afloat to United States	790 tons.	640 tons.
Afloat to England	495 tons.	323 tons.
Total	2652 tons.	3144 tons.

The visible supply on November 1, 1890, consisted of 2499 tons.

Mail advices from Liverpool dated November 1 give the stock of Pará at 479 tons, against 299 tons November 1, 1890; 520 tons November 1, 1889, and 490 tons November 1, 1888.

During October there was a moderate business transacted. Of Ceará rubber there had been no sales worthy of mention. On Mangabeira, 10 tons were sold. In Peruvian there had been more inquiry, the stock November 1 being 42 tons. In Africans the good business in the past two months had continued and an advance of 1@3d.

The demand for Centrals has been good in New York and arrivals have been sold in advance. In Africans there has been a small range in prices with a good demand. Balata has sold at 90 cents per pound, only one or two cases having been received during the month.

The latest New York quotations are:

Para, fine, new	64-66	Tongues	36-40
Para, fine, old	63-65	Sierra Leone	29-45
Para, coarse, new	47-50	Benguela	47-48
Para, coarse, old	49-52	Congo Ball	——
Caucho (Peruvian) strip	43-44	Small Ball	——
Caucho (Peruvian) ball	51-53	Flake, Lump and Ord.	25-27
Mangabeira, sheet	40-41	Mozambique, red ball	
Esmeralda, sausage	49-50	Mozambique, white ball	
Guayaquil, strip	38-41	Madagascar, pinky	51-55
Virgin Scrap	——	Madagascar, black	40-44
Carthagena, strip	——	Borneo	30-46
Nicaragua, scrap	46-49	Gutta percha, fine grade	140@150
Nicaragua, sheet	44-45	Gutta percha, medium	100
Guatemala, sheet	40-42	Gutta percha, hard white	100
Thimbles	42-43	Gutta percha, lower sorts	60-83

A late cable from Pará gives the price for fine Pará at 3750 milreis for Islands and 3950 for Upriver, with exchange at 13d. All secret and code language with Brazil was forbidden on November 12.

The amount of rubber on passage for England is stated at 40 tons by sail and 540 tons by steamer.

English quotations for fine Pará by cable are 33@43d.

The statistical position of Pará rubber in New York is thus reported for October, 1891, as compared with the same month in the previous years:

Statistics of Pará Rubber.

Stock of Para here September 30,	about	1,600,000 lbs.	
Receipts " " October	"	2,460,000	"
Deliveries " " "	"	2,760,000	"
Stock " " October 31, 1891,	"	1,300,000	"
" " " October " 1890,	"	900,000	"
" " " " " 1889,	"	750,000	"

Prices for October.

	1891.		1890.		1889.	
	Fine.	Coarse.	Fine.	Coarse.	Fine.	Coarse.
First	64½	44½	90	64	67½	43½
Highest	67	47	90	64	72	50
Lowest	63	45	75	53	67½	43½
Last	63	46	75	53	73	50

Simpson & Beers, New York, report: "Since our last report money has ruled very easy, and undoubtedly would have so continued, but for the Boston bank troubles which necessitated the transmission of a large amount of funds to Boston, which were on deposit, for account of the banks there. Presumably this money will be in a large measure returned during this month. Up to the disturbances there a good demand for rubber paper has prevailed, at 6 and 6½ per cent. for notes of three to four months maturity, and a renewal of this demand is not improbable before the month is ended. Gold importations have to a large extent offset shipments of currency to the West and South."

In rubber goods there has been one factor permeating the trade to its continuous detriment, and that is the weather. Some snow has fallen in the Northwest and within a few days a blizzard has been raging, and in that locality business has been good. Otherwise it has been a Sahara-like drought and all classes of business have suffered. In boots and shoes the demand from manufacturers has been up to the full capacity of the mills, but it is not probable that the jobbers have disposed of their stocks so readily as they could have wished. The demand for lumbermen's goods will probably not be supplied this season. Collections are easy, but one or two failures among retailers have caused a ripple of caution to pass over the trade.

In mechanical goods there is a steady demand for belting and packing. For packing for export there is a demand for the cheapest, and a price of 6¼ cents per pound has been made. In air-brake hose a good demand has sprung up from railroads who now are quite generally equipping their freight trains with the automatic brake. In steam-hose the demand—

The "CLARK" WIRE

INSULATION GUARANTEED WHEREVER USED, AERIAL, UNDERGROUND OR SUBMARINE.

In a letter from the Inspector of the Boston Fire Underwriters' Union, under date of March 29, 1886, he says:—
"A THOROUGHLY RELIABLE AND DESIRABLE WIRE IN EVERY RESPECT."

THE rubber used in insulating our wires and cables is especially chemically prepared, and IS GUARANTEED TO BE WATERPROOF, and WILL NOT DETERIORATE, OXIDIZE OR CRACK, and will remain flexible in extreme cold weather, and is not affected by heat. The insulation is protected from m chanical injury by one or more braids, and the whole slicked with Clark's Patent Compound, which is water, oil, acid, and to a very great extent fire-proof. OUR INSULATION WILL PROVE DURABLE WHEN ALL OTHERS FAIL. We are prepared to furnish Single Wires of all gauges and diameter of Insulation for Telegraph and Electric Lights from stock. Cables made to order. We are now prepared to furnish our Clark Wire with a WHITE OUTSIDE FINISH for ceiling cleat work as well as our standard color.

CLARK JOINT GUM should be used for making water-proof joints. This is put up in half-pound boxes, in strips about one foot long and five-eighths inch wide, and when wrapped about a joints, and pressed firmly makes a solid mass.

FOR RAILWAY AND MOTOR use, we make all sizes of stranded and flexible cables with Clark insulation. Wire Tables and price list will be furnished on application to

HENRY A. CLARK, Treasurer and General Manager.
HERBERT H. EUSTIS, President and Electrician.

EASTERN ELECTRIC CABLE COMPANY,
61 to 65 Hampshire Street, Boston, Mass.

Mention the India Rubber World when you write.

which has been large from railroads—continues. In fire- and garden-hose this is the dull season of the year.

In clothing the season has proved a dull one, all on account of the weather. A leading Broadway company have adopted the plan of special sales with good success. In "druggists' sundries" a little pushing has worked wonders with some manufacturers. The hard-rubber and insulated-wire people have not done much, but are confident that they can catch up before spring with what would be called a good year. Other specialties and novelties have been fairly active.

Rubber Bands on Wheels.

THE placing of an India-rubber band on a wheel requires no little skill, and it is said that few manufacturers take pains in this direction. The wheel is first slightly heated, a pitch or a sort of cement is spread on and the band slipped over all. The composition of cement is said to be a secret. Properly put on the band seems to be almost undetachable. The compound used for this purpose varies in its purity according to the use required of it that for bicycle wheels probably being the best. It is impracticable to state how much rubber is used in this way, that for bicycles being roughly estimated at 1,000,000 pounds a year. The wheels of carpet-sweepers consume no small amount. Thus it is stated that the Bissell people take 4000 pounds of rubber compounded every month. In such capacity its use is manifold. A new band-saw was lately invented in England, and immediately it was suggested that the wheels over which the band revolved should have their rims covered with India-rubber so as to form an elastic bed for the saw. The placing of bands on carriage-wheels is well known and one hardly sees a complicated piece of machinery in which a wheel with a rubber tire does not form a part.

Three Classes of Buyers.

THERE are three classes of buyers in trade—one who buys too much, one too little and the other, who draws the line between the two, and strikes the happy medium. The first, as a rule, is always burdened with too much stock. Seasons come and go, and his shelves are filled with goods out of fashion and out of season. As a rule he is always short of money, behind with his bills, simply because he buys too much.

The merchant who buys too little or too small a stock lacks knowledge of his trade and loses custom by not keeping a sufficient supply on hand to meet the current wants of his customers. Over-cautiousness in this direction is almost as bad as over-buying. It often gives his competitor the means of supplying his regular customers. The good merchant will note what lines sell best and consult with his clerks, or those at the head of the departments of his establishment.—*Dry Goods Chronicle.*

The Labor Supply Limited.

THE newspapers report the Woonsocket Rubber Co. as having some difficulty in securing skilled labor. This is a natural condition of the labor market, the company having some time ago built a new mill. Labor migrates slowly, and the difficulty can only be overcome, as is being done, gradually taking considerable time. Illustrations of this fact can be found in other lines, as in the slow building up of the cotton-goods industry in the South. The labor of New England that does not possess much skill is gradually going South and West, but industries requiring great skill cannot readily move from that section. Englishmen are selecting New England as a home for their enterprises on account of labor there that can be more readily drilled than in other sections. The making of rubber boots and shoes requires much skill, and a dearth of it is felt in every busy season.

India-Rubber in the Field of Invention.

WHILE inventions of machinery all the while are displacing labor, other inventions are actually creating labor where none existed before. As an example of this the whole department of electricity, electric-lighting, telegraphic operations, the telephone are striking examples. Hundreds of thousands of people are brought into employment through such inventions where no one was ever employed prior to their existence. The invention of vulcanization, by which India-rubber is made available for wearing apparel, has furnished employment in untold quantity, where none has been displaced; and not only in furnishing employment, but in increasing the comfort and health of the people, the influence has been incalculable.

There is a constant change, not only in the occupations of men, but in the uses of materials. A recent writer says: "For many years gutta-percha and India-rubber held the market for a thousand toys and fancy goods, but celluloid came in for a share of the profits and soon afforded employment to thousands of workmen in great factories. Gutta-percha has about gone out of the market, and India-rubber has become so valuable that nobody ever sees the all-india-rubber shoes that used to keep dry the feet of our grandmothers."